Urban Animal Management:

a naturalistic perspective

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This thesis is my original work and has not been submitted, in whole or in part, for a degree at this or any other university. Nor does it contain, to the best of my knowledge and belief, any material published or written by any other person, except as acknowledged in the text.

Signed: David W Parton

Dated: 29 October 1998

Abstract

The thesis uses a naturalistic perspective derived from Darwin's theory of the origin of species by natural selection to propose that human beings and dogs co–evolved in an interdependent relationship which needs to be taken into account by makers of public policies about urban dogs. An association with dogs is thus one facet of human nature and *vice versa*. The perspective is used to explain both the othering of animals by the human species and also the long and close association which the human species has with dogs. The complexity of that association is examined by reviewing quantitative and qualitative research data. The evolution of western thought about animals is followed through legislation on urban animal management, with particular reference to legislation in the Australian Capital Territory. Fieldwork included a visit to Jaipur, India.

Refinements of Darwin's theory which are used to further the argument for the co–evolution of human beings and dogs include the extended phenotype, cooperation to compete, exaptation, and the functional branch point and punctuated equilibrium in evolution.

The naturalistic perspective used here is offered as a way of leavening the discourse of control of urban dogs that is argued to be the orthodox philosophy of urban animal management. Examples of the application of the naturalistic perspective are described. It is concluded that access to dog keeping is a deep seated biological need of the human species and should be fostered by policy makers.

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Preface and Acknowledgments

The topic for this thesis was chosen largely because of a suspicion that the concept 'responsible pet ownership' was unsatisfactory as the main pillar of policy on urban animal management. There has been comparatively little theory developed in urban animal management, though the subject is important to local governments. It was fortuitous for writing the thesis that human evolution is being re–thought in a revolutionary way. Revolutionary thinkers on evolution and on the human animal relationship were sources of inspiration.

The argument for the naturalistic perspective on dogs in the urban environment was presented at various PhD candidate seminars organized by the National Center for Development Studies in 1993, 1994 and 1995. The argument was presented to a wider public in a paper given at the third national conference on urban management in Australia, at Canberra in 1994 (Paxton 1994:103–12). That paper foreshadowed the arguments in this thesis. The paper suggested that the relationship between people and dogs could usefully be viewed as a co–evolved biological interdependence between two urban animal species and that this interdependence should be taken seriously by urban animal managers at the field and policy levels. The paper called for local government to deliberately create a climate of goodwill towards dog keepers.

The main part of this thesis was prepared under an Australian National University scholarship which allowed the writer to do little else but

think for two years or so. This was a rare privilege, especially for a mature age student, and is deeply appreciated.

Many people must be acknowledged, with pleasure, for their assistance. Firstly and mostly, Michael Hess, my supervisor, who read everything I wrote *ad nauseum* over several years and explained time and again that a thesis is not meant to puzzle the reader. John Ballard provided an illuminating political scientist's perspective that guided the writer to prospect with confidence in the margins of various disciplines and mutiny against the directives of context. Gail Craswell made many helpful comments on the concluding chapter.

John Auty showed me, when I was an undergraduate in veterinary science and subsequently, the validity of linking thought with observation, rather than only referencing observation to textbooks. Jill Deck, Brian Brogan, David Corbett and Donald Denoon encouraged quirkiness in the writer as a diploma student. The ACT Dog Control Unit made data available readily. The members of Companion Dog Club of the ACT kindly gave me access to their library and facilities, and an insight into community participation. The Club shares access to member's dogs with institutionalized people and actively promotes dog keeping. Thank you to Christine and Jeremy Townend of Help In Suffering, who helped with my research in India. Thank you too to my friend Nongkran Chanvanichporn who put me in touch with the Tunsekan animal sanctuary near Bangkok. Michael Banyard and Richard Murray created a fertile environment in urban animal management and encouraged me to become involved in that

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This thesis is dedicated to my friend Ann Deshon, who died this year.

Chapter 1

Introducing the Urban Sextipede

Introduction

This thesis is about two animal species (the human being and the dog), attitudes to urban animals, and public policy. At base the argument is that the human being is an urban animal which associates with dogs and the dog is an urban animal that associates with human beings. Public policy makers (specifically, urban animal managers) who recognize that this association is part of the nature of both animals have, it is suggested, a chance of developing policies which can be implemented optimally.

The two animals came together in a tenuous association several tens of thousands of years ago. Over time and gradually, as the animals co–evolved, the association became intense and interdependent. Today, many human beings preserve their sanity in the urban situation by associating with four legged companions, especially the dog.

Despite its obvious durability, the association between human beings and dogs in the urban environment is fraught with problems that occupy much of the time of local governments and their constituents. Dog attacks, dogs defaecating, dogs urinating, dogs knocking over garbage bins, dogs barking, dogs in car accidents, dogs roaming, dogs cadging school lunches, dogs, dogs, dogs. On bad days, local government officers must wish that dogs, and their antagonists and protagonists, would simply go away.

Understandably, attempts are made to legislate the problems out of existence but the association between people and dogs is long lasting and real and so education through prosecution (Hindle 1992:23) often has social as well as operational costs. The dog cannot be dispensed with as a nuisance at worst and at best as a pampered pet, an accessory of the contented urbanite. The relationship between the keeper and the dog is complex and therefore intervention by local government officers may be seen by the citizen as a deprivation of his or her rights or amenity (Bartlett 1992:70–80). Local governments thus need to develop policies that are appropriately considered. The dog should be the subject of public policy, not the object of public policy.

Many of the reference points used in this thesis are conjectures. No apology is made for this. Those who have devoted their lives to discovering reference points in human evolution and painstakingly locating them in the existing literature, usually readily admit that there is much conjecture on our origins, so why not on our evolved associations with other animals?

The story of human evolution is intensely interesting to many people. Conjectural points and even matters put forward as fact are controversial and have been hotly and often bitterly debated. So intense has the debate been that some proponents have cheated: there have been instances in the literature of outright deceit, the Piltdown Hoax being an example that is mentioned in Chapter 2.

Interest in human evolution has again been inflamed relatively recently by discoveries which point to a relatively rapid evolution of *Homo sapiens* on a scale which can be imagined by ordinary people. However, co–evolution of *H. sapiens* with other animals has attracted little of this interest. When faunal remains in archeological digs have been analyzed, it usually has been to ascertain their importance as a food source for our ancestors. Therefore, a story about our co–evolution with other animals is a lonely story. It does not rub shoulders in a reassuring *genre.*

The thesis shows that one of the characteristics of *H. sapiens* is its use of stories for survival. It is suggested here that a humble appreciation that we co–evolved in an association of animals will have survival value for us as we crowd together in urban centers on this planet. The association with dogs may allow us to better conceptualize spaces and exist in densities that would drive many other animals insane. If we can appreciate, rather than depreciate, our animal natures, we can develop better public policies — policies that are less poisoned by political expediency or simple laziness.

To bring a biological perspective to public policy is to tread on dangerous ground. In this instance, however, it is suggested as quite logical and necessary to take a naturalistic perspective when discussing the interaction of two animals: the two main alternatives (the traditional story of human dominion over animals and the modern scientific story about man-made animals) have only limited usefulness. The thesis does not suggest that a naturalistic perspective should be the only one available to urban

animal managers, but insists that it should be one of the perspectives considered by them.

Story telling has enabled *H. sapiens* to burst the bounds of gradual biological evolution. In hindsight it can be assumed that the critical question is not whether the stories were right or not but, rather, that they were right enough at the time to preserve basic human culture in a naturally selective biosphere. Over the past few centuries, modern stories from science have enabled our slowly and continuously evolving bodies to take great leaps around the world, to the moon and, by proxy, to the planets. Stories allow us to soar like gods to the highest ethical heights and have plunged us to depths of evil that only a story telling animal could plumb. However, in public policy, our success at story telling has blinded us to the biological realities of our physical selves.

The thesis calls attention to the likelihood that *H. sapiens* could not have begun telling stories unless it was in a biological association which allowed the species to survive while it was developing the specialization which is language — especially the ability to speak in clipped, intelligible words rather than in tongues. The vocal apparatus of *H. sapiens* evolved into a physical configuration that permitted enunciation. Our tongue is a short blunt piston and our lips and teeth are the means by which vocal ejaculations become words. Neanderthal are but one of all the other species which could not do this. They became extinct, most probably because they

were in direct competition with us, even though they were arguably more obviously adapted to their environment.

The dropped face of *H. sapiens,* that makes speech possible, militated against traits such as a keen sense of smell. It does not make evolutionary sense that such an important trait should dwindle in importance, unless there were commensurate benefits. These benefits outweighed disadvantages, as the evidence shows, at least for the time being. In our cousins, the Neanderthal, change was conservative and premised on retaining faculties obviously critical to survival, such as a highly developed sense of smell. The result, however, was a physiognomy that permitted only poor enunciation and so set a fatal limit on their potential for organization. The Neanderthal did not leap, hand in paw, into the future, as we did.

In many animals (say the blind mole), change can be so radical that a biological function such as vision is lost altogether. Such an animal specializes for survival and, in doing so, becomes a prisoner of its environment. It will be argued here that human evolution is just as radical but different. *Homo sapiens* became liberated from its environment, to a certain extent, through an unconscious sharing of survival functions with associated animals. It is suggested that *Homo sapiens* and its associates co–evolved. As human capacity for organization developed, so did the capacity for associated animals to fit into that organization. They adapted and their progeny survived. Human organizations became evolutionary niches into

which the ancestors of other urban animals gradually fitted. It will be suggested that these animals were not created by human beings. Over time, they simply became. It is an urban myth that these animals were created by *H. sapiens* through domestication. In many ways they became part of us and we of them, for it must be seen as another urban myth that *H. sapiens* is a species standing alone. It is sensible instead to regard *H. sapiens* as part of a dynamic urban complex of species that is internally cooperative and externally competitive. On this basis, public policy can be viewed as a tool for organizing the complex. Public policy is thus an important instrument for the survival of *H. sapiens* within a complex of species. In reality, and with very few exceptions, however, public policy makers do not recognize that other species are a part of the human complex, except as instruments of human gratification.

This thesis is a particular kind of story, a hypothesis. It is structured to review its environment, put forward an argument, test that argument and reach conclusions. The dog has been selected as the case study. Another animal might have been selected as the subject of research, but the dog is most accessible to the writer and also is an important bone of contention for urban policy makers in local governments. The argument that is tested is that we are an urban animal in a co–evolved biological association with the dog. The conclusion reached is that makers of urban public policy should address the biological realities of our existence in an urban world just as seriously as the political, sociological and economic exigencies that they readily admit are important.

The thesis is structured simply. Chapters 2 and 3 argue that people and dogs are biologically connected in a natural relationship of co–evolution. Chapter 4 provides empirical and anecdotal evidence that the relationship is as complex as could be expected under the circumstances of co–evolution. Chapter 5 suggests why the issue is important enough in the broad biological sense to merit the attention of policy makers and how they might benefit from using a naturalistic perspective. Chapter 6 concludes the thesis.

This thesis is about developing better public policies through a radical reappraisal of their philosophical basis. Human beings are discussed as animals, whereas most texts discuss animals in relation to human beings. The thesis discusses whether the capacity of a society to administer creative policies about urban dogs is related to its capacity to develop and administer effective, efficient and equitable policies for the well being of its people. Reaction to the urban dog may reflect the attitudes of a society to its internal and external environment generally. The heavy irony used by Andrew Rowan of the Tufts Center for Animals, Maryland, USA is quoted to draw attention to the biological plight of the urban dog being shaped into a model urban citizen:

> In one flippant sense the ideal pet dog would be toothless, sterile, silent and constipated to be suited for life in an urban environment (Rowan 1986:14).

It would be startling had he used the statement in relation to another urban animal, the human being, yet the irony would be as instructive.

The thesis will have achieved its purpose if it shows that public administrators have a responsibility to treat the urban dog seriously as a subject of policy rather than reacting to it as an object in human ownership. It contributes to theories on which policies about urban animals may be based. The urban dog was selected as a case study since the dog is an animal of concern to the urban administrator worldwide. Practical considerations favoured using Canberra, Australian Capital Territory (ACT) as the research base because the writer lives there and the city is a model of a relatively controlled urban dog population. Comparative information on relatively uncontrolled urban dogs was obtained, chiefly during field work at an urban animal sanctuary in Jaipur, India and to a limited extent through other observations in India, observations at an urban animal sanctuary (Tungsekan) near Bangkok, Thailand, and observations on dog keeping at the Wallaga Lake Koori Village of the Merrimans Tribal Aboriginal Land Council in southern New South Wales. The association between dogs and human beings has also been observed in an informal way in Bali, Lombok, and in urban settlements and villages in Papua New Guinea.

In the theory advanced in this thesis, human beings and dogs are regarded as a complex unit which itself has evolved, such that part of what constitutes a human being includes an association with dogs, and *vice versa*. The theory requires reappraisal of dominant models of thought (dominant in western society at least) which cast human beings as the dominators, stewards or creators of domestic animals. The theory is called a ***naturalistic perspective*** and has the following components:

- human beings and dogs are regarded as animals whose natural habitat is the urban situation;
- the human–canid relationship is regarded as evolved and closely woven;
- human beings and dogs are seen as interactive;
- the general theory of natural selection of species is used as the framework within which the perspective is located.

For policy purposes a naturalistic perspective may be stated briefly: *people and dogs are urban animals that have co–evolved in a complex association which includes biological dimensions. This complexity needs to be understood by public administrators if effective, efficient and equitable policies are to be developed.*

A naturalistic perspective may be understood as an ecological approach. The human home base became an ecological niche for other animals when human organization crystallized. The human home base was not static and evolving human beings adapted to changes which occurred in it, as did the other animals. Animals are shaped by their environment and may cooperate with each other and with other species to compete successfully in that environment. Of course, such cooperation is not, at heart, conscious or purposeful, but appears so when analyzed as cause and effect.

Hypothesis

The hypothesis of the thesis is that there is a biological relationship between human and other urban animals which justifies a naturalistic perspective in public policies for urban animals. As such, the thesis welcomes the subjectivity and complexity of the situation, unlike the orthodox concept of *responsible pet ownership* put forward in a discourse of control as the basis for public policy on urban animals. A naturalistic perspective challenges public administrators to regard the dog as a subject of public administration rather than merely as an object to be controlled for the perceived greater good of the community. On the other hand, the discourse of control is reactive. It does not adequately address the ecology of the relationship between dogs, dog keepers and the wider human community.

It is contended that developers of policy content who prescribe a discourse of control of the dog as an object, do not understand that the context of that policy is a dynamic biological interdependency between human beings and dogs in the urban situation. A naturalistic perspective is an additional way in which specialists in urban policy may view the context of the policies that they develop, and so may assist them to develop policies for their particular purposes which better match content with context.

The urban situation varies enormously within cities and between countries, in terms of physical, social and cultural characteristics. Increasing urbanization and increasing urban populations are important global issues. In Australia, urban dogs are ubiquitous, socially and economically important

and, as topics of conflict within urban society, rate high on the agendas of local governments (Woods 1993:38–44); yet academic institutions concerned with public policy have rarely regarded urban animal management as a serious subject for study. Because of its biological underpinning, a naturalistic perspective is an analytical tool that can be used to examine public policies in a wide range of urban situations.

Goal and purpose

The goal of this thesis is to contribute to theories in urban animal management by developing a plausible argument that we share a biological relationship with other urban animals — in this case, the urban dog. This goal will be achieved if a naturalistic perspective is accepted as an alternative to either the traditional notion of human dominance of animals as a conceptual basis for policy making or to the modern idea that the dog was created through the process of domestication. The goal of the thesis is to develop an argument that can shape the attitudes of policy makers and of the public at large about the relationship between human beings and urban animals.

The thesis applies a naturalistic perspective to argue for wider participation by the community, including those who do not keep dogs, in the development and implementation of public policies about urban dogs. The perspective illuminates natural processes that complement the discourse of dog control and so can be capitalized upon by administrators who seek to develop more organic, less adversarial, and less expensive public policies.

In presenting a naturalistic perspective, the thesis challenges the prevalent understanding of the domestication of the dog as a human mediated, cultural event. The thesis presents an original synthesis of published observations and theories in evolution and proposes that the relationship between human beings and dogs includes biological meanings. The relationship therefore has added complexities of which makers and administrators of public policies must be aware if they are to ensure that policy outcomes match the realities of their context. A biological understanding of the human–canid relationship is a basis for changing attitudes about human–animal relationships and so opens up avenues of research into our relationships with other animals, especially urban animals. The policy implications of a naturalistic perspective thus are substantial.

In summary, the goal of the thesis is to offer a naturalistic perspective as a postmodern complement to the mix of traditional rule making and modern rationality, which underpins the orthodox discourse of control of the urban dog.

Research tools and method

A wide range of literature has been consulted on the subjects of natural selection, palaeontology, animal behaviour, animal rights, the human-animal continuum, political science, feminism, history and development administration. The thesis may be challenged as ambitiously multi-disciplinary. However, it became clear early in the preparation of the thesis that a broadly based approach was necessary to challenge the paradigm of responsible pet ownership, which is a pot pourri of ideas and attitudes.

The literature review has been supported by practical involvement by the writer in urban management policy making, including:

- a report to the Minister for Environment, Land and Planning in the ACT of an analysis conducted by the writer of over 1,000 job sheets of the ACT Dog Control Unit (see Appendix);
- editorship of, and contribution of a paper to, the proceedings of three national conferences (Paxton 1993a, 1994 and 1995[1]) on urban animal management in Australia;
- a public address on the occasion of Pet Week 1993 in Canberra and an address to the ACT Companion Dog Club;

[1] Patrick Boland, a veterinary colleague, co-edited the 1995 conference proceedings.

- inputs to policy for the formation of a Companion Animal Council in Australia; and various correspondence with Members of the ACT Legislative Assembly, government organizations, Australian newspapers and radio stations on urban animal policy. Talks have been given to community groups with the deliberate intention of exposing the hypothesis to public debate. The writer prepared a talk for the Australian Broadcasting Commission's radio show *Ockham's Razor*;

- the writer worked with a group of urban designers to include urban animal considerations in the proposed Jerrabomberra New Town (ACT), as part of a competition arranged by the Organization for Economic Cooperation and Development which is seeking ideas to address problems of urbanization. The group's design was rated second in the Australian round of the competition;

- field work was undertaken in developing countries and included inputs to policy of the Help In Suffering animal and people sanctuary in Jaipur; inputs to policy of the Tungsekan animal sanctuary near Bangkok; attendance at the inauguration ceremony for National Animal Welfare Fortnight in New Delhi; a visit to the Frendicos animal sanctuary in New Delhi; and an interview in Madras with K. Babu (Assistant Secretary) and

Priya Sundaram (Education Officer) of the Animal Welfare Board.

Context

There are three important factors that initially conditioned the flow of thought in this thesis. The first is the observation that the dog is part of urban existence wherever the writer has been in Australia or elsewhere. The second is that in those societies that can afford to implement public policies, the dog has come to be viewed primarily as an owned object. A parallel observation is that these societies seem to be losing contact with their context and are embracing public policies that, while rational, are often ungenerous to minorities in the urban situation. The third factor was the hunch that where urban controls are not feasible due to lack of resources, the real relationship between people and dogs will be revealed as a viable association that is self regulating.

Field studies in Canberra and Jaipur gave insight into the human–canid relationship. This insight works qualitatively in the background of the thesis rather than determining its outcomes in a quantitative way, as might be the case with a scientific study. The human–canid relationship does not lend itself to quantitative analysis although, as shown in Chapter 4, several researchers are attempting to develop empirical tests of the relationship.

The discussion in the following paragraphs attempts only to establish context. Subjects dealt with are:

- The research base, Canberra, is defined using selected statistics.
- The discourse of control is defined in round terms with respect to the Australian and Indian situations.
- A sketch of the policy environment of urban dogs in Jaipur is provided.

Canberra, in the Australian situation

Canberra is the capital of Australia, created because of the Federation of Australian states and located in the Australian Capital Territory. The city and its associated towns are the only significant centers of population in the Territory. The land for the Territory was ceded by the State of New South Wales in 1909. Early development of Canberra may be described as reluctant. Few public servants wished to be posted to the 'bush capital'. The city of Canberra was designed and eventually begun in spite of inertia due to bureaucratic wrangling, the advent of the First World War, and economic depression. Thus it was not until 1927 that the Federal Parliament sat in Canberra.

The city was built to a plan developed originally by the Chicago architect Walter Burley Griffin. Griffin used a naturalistic perspective to foster a relationship between the city and its climate, vegetation and topography, but apparently did not apply the perspective specifically to human beings and associated animals (Christopher Vernon pers. comm. 1995; Vernon 1995:130–7). The eventual successful commissioning of the

city was due to strong direction from the Federal Capital Commission. However, the Commission was disbanded in 1930 amid accusations of authoritarianism and extravagance and the development of Canberra then languished until 1958 when the National Capital Development Commission commenced operation. The Commission reaffirmed the relevance of Griffin's design and in 1965 published a policy for a city with open characteristics. To accommodate future population expansion, a policy of linear urban growth was adopted. This was a radical departure from conventional growth patterns in other Australian cities. New towns were gradually established in valleys separated from central Canberra by undeveloped hills and ridges but connected by central corridors of open space which served for transport and parkland (Report of the Committee of Review 1983:123–32).

Canberra is unusual among cities in Australia in being amply 'interpenetrated with Greenspace' (Pullen 1977:41). Within the city, this space (sports areas, parkland and floodway easements) amounts to 1,600 hectares. A further 30,000 hectares of open space is provided to enhance the character of the city as the national capital, and 140,000 hectares are provided outside the city as regional open space. The provision of open space provides urban amenity and promotes Griffin's concept of landscape as a cohesive element in the national capital design, but came to be criticized repeatedly as extravagant by the Department of Capital Territories which managed the open space until self government (Report of the Committee of Review 1983:106). The ACT became self governing on 11

May 1989. The role of the National Capital Development Commission then was split between the National Capital Planning Authority, a federal body primarily interested in characteristics to do with the capital, and the ACT Planning Authority with municipal interests. Proposed variations to open spaces are gazetted and so are under public scrutiny.

The results of the 1991 census show that Canberra workers had a median personal income of $20,000 to $25,000 per year and the average household earned $40,000 to $45,000 per year. Seventy-one per cent of the population was Christian, 31 per cent being Catholic, 22 per cent Anglican and 5.8 per cent Uniting Church. Buddhists were the next largest religious group, comprising 2,900 persons or 1.1 per cent of the Canberra population.

In Canberra, at about the time of the census, forty-six per cent of the work force was employed by the Commonwealth or ACT Governments, and only 6.3 per cent was self-employed (*The Canberra Times* 25 April 1993:3).

In urban animal policy in Australia generally, and perhaps especially in Canberra where the policy was stated as 'Your Dog ...Your Responsibility' (Australian Capital Territory (ACT), Government of, ACT Parks and Conservation Service c1993), the policy of dog control is based on the notion of responsible dog ownership. This leads to a discourse of control implemented by systems designed to achieve some, and occasionally all, of the following:

- legislation to identify the dog and its owner, and to promote the dog's control through leashing, fencing and obedience training;
- impounding dogs caught in public places and penalizing their owners to enforce observation of the legislation;
- education programs on responsible ownership and good stewardship of the dog;
- public support for organizations which promote responsible dog ownership and stewardship,
- controlling dog numbers through rehabilitation or killing of unclaimed stray dogs, or through regulating the supply of pups; and
- forums in which interest groups can reach consensus on standards of dog ownership.

Dog control legislation is supported by legislation to protect the welfare of the animal and to address public nuisances caused by the dog. In the ACT, the Dog Control Act 1975 (Australian Capital Territory 1991a) prescribes areas for dog exercising, on and off leash. There is no doubt that the discourse does achieve a degree of control over dog owners in Australia. Success is tenuous, however, as shown by low compliance with registration requirements and escalating fines for breaches of the legislation. There is dissatisfaction among policy makers about shortfalls in expected outcomes, and there are concerns about side effects of implementation. There is a

temptation for local government agencies to simply prohibit dog ownership to alleviate problems associated with dog ownership. Owners whose dogs are perceived as problems are termed 'irresponsible', and root causes of the issues under debate are not explored further.

Richard Murray (1993:11–17) calls for better urban animal management to solve the paradox of pets being problems to the community and yet beneficial for their keepers. For over a decade, Murray has purposefully drawn the need for better urban animal policy to the attention of local government. In a second edition of the book he co-authored with Helen Penridge, a comprehensive array of ideas is put forward for a more rational managerial approach to dogs and cats in urban municipalities, but a naturalistic perspective is not fully embraced (Murray and Penridge 1997). Legislative requirements can be like 'water off a duck's back' to dog keepers, according to Phillip Revill, of the ACT Dog Control Unit (1994:45). Recently programs have been developed to improve implementation of the control policy through such techniques as privatization and community participation in policy implementation. While these programs are a serious attempt to improve an existing situation, they offer no radical alternatives to a discourse of control. Instead they aim to reduce the adversarial positioning of local government and its constituents.

In Australia, municipal legislation generally is developed by state parliaments for administration by local governments. Stuckey makes this comment in relation to New South Wales, within which the ACT is located:

> Councils have *administrative* functions and they do only those things they are authorised to do so by statute. Councils do not make the law but administer the *Local Government Act* (and other such Acts which impinge on local government) within their area. Parliament on the other hand is a *legislative* body and in that sphere there is consequently a struggle for power between parties for the right to legislate in accordance with party policy (Stuckey 1991:xiv).

Stuckey (1991:xv) noted the tension caused when costs of administering legislation developed by a remote body have to be met by local governments.

In the ACT, legislation (including amendments to the Dog Control Act 1975) is developed in the ACT Legislative Assembly which is structured along the lines of a state parliament. However, since the Territory government is involved directly in municipal affairs, the situation is simplified compared with other states where councils have to carry out policy made by state governments.

In Australia, the keeping of dogs as pets is important economically, socially and, potentially, politically. In 1994, the Australian Bureau of Statistics (1995:168–71) found that Australians kept around 3.13 million dogs, with 37.5 per cent of all households having one or more dogs. A further 2.48 million cats were kept, by 26.7 per cent of households. Just over half of the dogs were desexed. Australians spent $36.3 million per week on food for dogs and cats, and spent on average almost an hour per day exercising, caring and grooming their dog. Nationally, almost 44,000 lost dogs were sheltered by the Royal Society for the Prevention of Cruelty to Animals and 50 per cent of these dogs were destroyed.

In 1993 a survey of Canberra ratepayers was commissioned by the ACT Government (Australian Capital Territory 1993b). The survey included questions on dog and cat keeping. On the basis of the results, it was estimated that the city consisted of 295,500 people, in 102,099 households of which, on average, 38 per cent kept dogs. This was a decrease from 41 per cent of households which kept dogs in 1983 (Australian Veterinary Association 1984:5). The ratio of dogs kept to people in ACT was about 1 to 8. Of the total of 36,000 dogs kept, 69.3 per cent were desexed. Some 20,000, or 55.5 per cent of the dogs were registered (Australian Capital Territory 1993b; Paxton 1994b:27–8). Further analysis of the ratepayer survey data showed that 82.4 per cent of the dogs were kept in owner occupied dwellings. These were predominantly (91.7 per cent) of the standard house or duplex type, rather than apartments or mobile homes (Paxton 1994c:2).

Phillip Revill, the Registrar of the ACT Dog Control Unit, is of the opinion that the population of dogs in Canberra is actually about 50,000. He believes that the ratepayer survey design may have been faulty because many residents, himself included, did not receive invitations to contribute (Revill 1994:45–9). However, the rate payers survey results are commensurate with the findings of the Australian Bureau of Statistics (1995:168–71), mentioned above.

The ACT Dog Control Unit was located in the Department of Environment, Land and Planning until the 1995 elections saw a change of

government in the ACT. Under the present government, the Dog Control Unit is located in the Department of Urban Services. The Unit administers the *Dog Control Act 1975* and the *Animal Nuisance Control Act 1975*. The Unit comprises a staff of thirteen, a purpose built animal pound and four especially built radio controlled vehicles. Its staff comprises the Registrar, an Investigations Officer, an Animal Nuisance Control Officer, three general duties office staff, six Inspectors and a Pound-keeper. The Unit reports directly to the Minister concerned, unlike services in other States where policy is determined at state government level and administered at the local government level. 'We are fortunate to have the people who write the legislation working closely with the inspectors who actually enforce the law' (Revill 1994:44–9).

In 1993 the writer examined a sample of job sheets of the Dog Control Unit to ascertain activity of the Unit since self-government and so assess the impact of dogs in public places in Canberra. The job sheets do not deal with complaints about dogs barking as this problem is covered by different legislation. Some 1,013 job cards relating to four suburbs were examined. These were estimated to represent ten per cent of the cards filed by inspectors since self-government on 11 May 1989. The report of this survey is at the Appendix to this thesis. Table 1 below provides a summary of the main complaints relating to dogs in the four Canberra suburbs.

Table 1: **A sample of complaints about dogs in four suburbs of Canberra during 1 May 1989 to 30 June 1993**

Complaint	Frequency
Dog roaming at large	726
Savage (menacing or attacking) dog	308
Dog defaecating in a public place or on complainant's property	97
Dog scavenging in garbage bin	83
Dogs forming packs	67
Dogs jumping fences	59
Dogs digging in complainant's garden	47
Dead cat to be picked up (road accident)	24
Dead dog to be picked up (road accident)	22
Injured animal to be picked up	21
Dog roaming at school	20
Dog obstructing traffic	20

It may be obvious that the underlying complaint against the dogs is that they are out of control. It is clear that public resources are available in Canberra for dog control and these are allocated rationally according to a legally defined policy. Statistical information is available or can be developed relatively easily.

The situation is different in Jaipur, where little up to date information is available in written form.

The situation in Jaipur, India

The differences between Jaipur and Canberra could hardly be more marked, though both are capitals. Jaipur was not designed to be the capital of Rajasthan State, which shares a border with Pakistan, but it became so as Jaipur authorities were reluctantly caught up in political change and population movements after Independence and Partition (Raja Atal, pers. comm. 1994). Rajasthan State was formed less than fifty years ago by the amalgamation from 18 March 1948 to 26 January 1950 of several princely States, one of which was Jaipur (Dave, 1966), which became its capital. Rajasthan State now has a population of around 44 million people, and Jaipur, which in 1961 had a population of fewer than 50,000 people (Bhardwaj 1970:21), is now bursting with a population of 1.1 to 1.2 million people, with marked congestion in the commercial areas and on major roads. Street dogs are ubiquitous. There is little general impression of affluence in Jaipur, though occasional well-off individuals were met. At the time the writer was based at the Help In Suffering sanctuary, the basic wage

for a sweeper was 750 rupees (then about twenty Australian dollars) per month and for a government veterinarian, between 5,000 and 6,000 rupees (about one hundred Australian dollars) per month.

In India relatively few dogs are kept by people as pet animals in an exclusive private relationship. This situation is changing as the Indian middle classes grow and keep pet dogs, but most dogs are in a loose association with urban people. By comparison with the Australian situation their numbers and behaviour are uncontrolled. Although many of the dogs may be in a stable relationship with people as their protectors and benefactors, the bulk of the dog population is subject to natural attrition from disease and starvation. Specific information on the dogs in Jaipur is given later.

The basic Hindu philosophy concerning animals is encapsulated in the concept of *ahimsa* which is concern and compassion for all living things, based on Buddha's belief that human beings and animals were equally beloved of God (Animal Welfare Board of India n.d.). The anthropologist Marvin Harris, in his desktop study of sacred cows in India (1992:275), regarded *ahimsa* as a cultural adaptation to the basic system of production in India. The following statement from the Board is illuminative of policy fundamentals in India, both as an animal welfare prescription and as a reaction to the situation which actually prevails:

> Since stray dogs are poor peoples' dogs who look after their property from antisocial elements, killing of these dogs should be avoided. Instead, it would be ideal, if the Municipal

> Corporation provides surplus food bins on the road sites, so that excess food can be hygienically dumped in the bins and the stray dogs can have a better hygienic meal thereby avoiding diseases. Animal Welfare Organisations can rescue people's dogs and shape them up by castrating the male ones, sterilising the female ones and administering anti rabies injections (Animal Welfare Board of India n.d.:27).

The comment was in response to concerns by the Board at cruel practices of municipal dog catchers, who may catch dogs with tongs or drag the dogs behind bicycles to pounds where the dogs are crowded together before being killed by a variety of cruel methods. The Board recommended a number of policies for street dogs, including leaving the pups with the mother, use of running chains as a means of confining the dog, and feeding dogs on a vegetarian diet, to avoid cruelty to other animals. The Board made it clear that cruelty to dogs was commonplace in India and the Board did not regard poverty or lack of education as a reasonable explanation for such a situation.

On the other hand, the writer's observation was that the outcomes of *ahimsa* can be equivocal. For example, animal welfare institutions might take in a suffering animal but were then observed to be reluctant or unable to provide any treatment or to intervene with euthanasia even though it was clear that the animal continued to suffer. Veterinary treatment may have been impractical or too expensive, and euthanasia clearly was not considered.

Contemporary urban local government institutions in India were a British innovation that replaced traditional systems[2]. The model for municipal government in big cities became, and remains, the Bombay Act 1888 'which bifurcates deliberative and executive functions' of municipal government (Jha and Mishra 1984:61). However, the Indian Constitution (26 January 1950) did not recognize local government as entities but concentrated on the *panchyat*[3] system. Local governments are 'the creatures of the state governments' (Jha and Mishra 1984:65; Pal 1968:163) and so differ in the details of their operations. In Rajasthan, for example, the power to develop urban policy rests with the Chief Town Planner, a state official. These powers include the disposal of stray dogs and wild animals. However, according to Bhardwaj, 'it has been observed that the present day working of local bodies is dominated by party factions and the representatives do not fully devote time and attention to serving the tax payers, as they should' (1970:103, 116). He argues for more use of committees to service particular

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[2] These forms of government ('*panchyats*' from the Sanskrit *pañca* meaning five) were based on self government within Hindu castes, but tended to be by-passed after the Evidence Act 1872, introduced by the British government, strictly defined admissibility of evidence (Britannica, Micropaedia, vol. 9, 1989:108)

[3] As background to the field studies, a superficial appreciation of the Indian system of local government was attempted. Rajasthan was the first state to try '*Panchiyat Raj*', that is, decentralised local participation at the local level of government, under state guidance. Under the Rajasthan Panchyat Samitis Act 1959, layers of this *raj* were introduced: numerous *panchyat* or village local governments, 232 *panchyat samitis* with community participation at block level, and 26 *zila parishad* or district governments which consisted of the Chairmen of the *samitis*, Members of Parliament, the President of the Co-operative Bank and a state Secretariat. *Panchyats* could be over-ruled or dissolved by the state government. Village *panchyats* were expected to perform municipal functions under the chairmanship of a *Sarpanch*, but the *panchyat samitis* are the key to the system and have wide powers including development plans and collection of land revenue and entertainment tax, in the proceeds of which they share. Although salaried officials may not be members of *samitis* or *parishads*, the Collector, who is District Development Officer of the *parishad*, in fact played a pivotal role in policy (Pal 1968:161-8).

local government functions, such as public health. Jha and Mishra consider that 'the formidable list of obligatory and discretionary functions assigned to the urban local bodies has not been supported by an adequate devolution of financial resources ... [such] that they have not yet been able to function as autonomous government units in the real sense of the term' (1984:76). The writer was advised of widespread, institutionalized avoidance of municipal taxes and also of claims that dominant political groups interfere with the state and municipal election processes, either through rigging votes or otherwise taking advantage of uneducated voters. Bhattacharya's comment may serve to summarize the general situation of local government:

> Urban local government in India may be likened to an old but incomplete building that has nevertheless had no dearth of residents. Occasionally, repairs have been carried out without any overall plan for the simple reason that the building plan is said to be missing (Bhattacharya 1976:1).

The situation is thus very different from that described above for Canberra. Dog catching in India is conducted with few resources, is poorly managed and cruel, and anyway is usually ineffective because the dogs are often under the protection of the neighbourhood and dog catchers' vans may be stoned (Pearce c1993:21–4).

The national legislation relating specifically to animals is the Prevention of Cruelty to Animals Act, 1960, which deals chiefly with the welfare of draught and performing animals, and to animals being transported. The legislation is promulgated by the central government. This legislation was amended in 1982 to include general provisions for defining

cruelty to animals (including the use of strychnine injection or other cruel methods of killing stray dogs [Chapter III, section 1]), to include experiments on animals and to formally establish the Animal Welfare Board of India. The Board is an organ of the central government, mentioned in earlier legislation but described fully in the 1982 amendment. Membership of the Board is broadly based. Its 28 members include representatives from central, state and municipal levels of government, from traditional and modern practitioners of medicine, the veterinary profession, non-government animal welfare organizations and government departments. Additional members may be co-opted.

The process of participatory government is thus an important policy goal in India. Contemporary governments also need to deal with an emerging middle class. The middle class in India is significant and growing rapidly in numbers, and is oriented towards economic consumption (Crossette 1993). 'Experience the envy' are the unabashed words in English on a hoarding which advertises Onida television sets at the entrance to the Pink City in Jaipur. Pet dog ownership may be an icon for the middle class family, with 'having a doggie' being third among the qualifications advertised for those aspiring to own India's largest single door refrigerator (*India Today*, 15 November 1993, page 86).

The writer conducted field work at the Help In Suffering (HIS) sanctuary for people and animals, located in one of the Jaipur suburbs, Durgapura, in December 1993 and January 1994. The aim was to observe

the relationship between people and dogs in a situation where little government intervention could be expected. A full description of the sanctuary is given in Chapter 4. The libraries of the Rajasthan Institute of Public Administration[4] and the Rajasthan University were visited. The utility of the university library was limited by frequent electrical power failures which made it difficult to read, the lack of up-to-date reference materials and because the period coincided with state elections, the supporters of the various factions making the situation unsafe for bystanders, particularly around the university.

This field work, however, allowed the dynamics of human–canid interactions to be observed as they exist outside a highly funded public policy environment. This gave the writer a benchmark[5] from which to develop ideas described in this thesis and also provided insight into a situation where municipal authorities have clearly lost the battle (though not necessarily the war) against waves of immigrants to the city. This situation contrasted markedly with the orderliness of Canberra.

According to Dr Ramchandani (pers. comm. 1994), President of the Rajasthan Veterinary Association, trustee of the HIS sanctuary and senior government official at the Polyclinic for animals, in 1988/89 a census was

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[4] Dr Daya Krishnan Mangal of the Institute kindly authorised the writer's access to the library.

[5] A similar situation exists in Port Moresby in Papua New Guinea. Squatter settlements have proliferated and in them dogs live and die with little human intervention. In general, even dogs that have been befriended by people can be observed as emaciated and unhealthy.

undertaken of the dogs in Jaipur. Each sweeper (municipal worker) was asked to count the dogs in the blocks for which they were responsible. On this basis, the population of dogs in Jaipur was estimated as 70 to 80,000 dogs. Ramchandani thought that an additional 14 to 15,000 pet dogs might be kept in the city. Desexing of female dogs is carried out, but usually involves only ligation of the Fallopian tubes, with the result that female dogs continue to come into 'heat' and are also susceptible to endometritis caused by the operation. Ligation is probably preferred because of the risk of internal haemorrhage from more radical surgical removal of the ovaries. Since diseases such as babesiosis are common and may affect clotting of the blood, the risk of a dog dying during surgery is significant.

The writer interviewed Mr Pat Tiwari (pers. comm. 1994), a lawyer and Deputy Secretary of the Department of Administrative Services to ascertain the infrastructure of government concerning urban dogs. Mr Tiwari is an active supporter of the HIS sanctuary and described the local government situation pertaining to dogs. In Jaipur, urban management is the responsibility of the Municipal Corporation. Strategic development of the city is controlled by the Jaipur Development Authority and the Housing Trust that builds and sells housing. The issue of stray dogs is dealt with by a section of the Municipal Corporation under the directorship of the Health Officer, a medical practitioner who is responsible for sanitary measures in the city. The Health Officer was in charge of the Municipal veterinarian. Policy on urban dogs in Jaipur is ultimately the responsibility of the Director of Animal Husbandry in the Rajasthan State Government. The

Municipal Corporation is directed by a Council of elected members. However, at the time of the writer's visit, the Council had been disbanded by the state government, pending a review of the Municipal Corporation's capacity to handle the rapid growth of Jaipur. Thus the Corporation was at that time run by an appointed Administrator. Bureaucrats within the Municipal Corporation functioned within an operational hierarchy separate from policy development. This situation is explained by the bifurcation of deliberative and executive functions, whereby the role of the Council is to 'throw the light of publicity on all its acts [of the executive]' (Bhardwaj 1970:140). Since this leads to uncertainties and interferes with administrative functions, Bhardwaj is of the opinion that administrators within municipalities should be permanently appointed.

Urban dogs are a concern for government because of a fear of rabies (B.B.L. Mathur pers. comm. 1994). Policy concerning that disease is developed at state level and implemented in a tenuous fashion. B.B.L. Mathur is in charge of the Rabies Control Unit at the Polyclinic in Jaipur and agreed to be interviewed. He advised that the Municipal Corporation had in the past employed a veterinarian, but the position had been vacant for some time. The work of municipal dog catchers is thus not under professional direction. The implementation of policy is weak. However, since dogs are regarded by Jaipur residents as useful guardians, some 300–400 are presented each month for vaccination against rabies. When animals suspected of being rabid are notified to officials, the animals were killed with magnesium sulphate, strychnine or barbiturate injections. When

officials are not notified, animals suspected as rabid are clubbed or stoned to death by villagers.

Official intervention is tolerated by the community if a rabid animal is at large or if rabies is perceived as prevalent. Otherwise, dog destruction campaigns are resisted by local people and so tend to be conducted at night. In 1992 in Jaipur, 3,600 dogs were destroyed by authorities.

An incident that occurred during field work showed that there actually was little connection between the function of the Municipal Corporation to control dogs and the implementation of state policy on rabies. The writer was mentor (guru, according to Daya Prasad Sharma pers. comm. 1993) for a young graduate government veterinarian for a short time. On 27 December 1993 a rabid dog was left at the sanctuary and was destroyed by sanctuary personnel, including the writer. The writer inquired as how to notify the authorities. The young veterinarian replied that there was no point, the authorities would do nothing to trace the contacts of the dog, and there was little contact between the different forms of government. Yet rabies is an important disease in Jaipur, in the sense that many people attend hospital for treatment. Diagnosis of the disease is free, but purchase of anti–rabies biological products (such as serum or vaccine) from pharmacies was generally beyond the means of poor people, a clearly anomalous situation.

The policy situations in Canberra and Jaipur show both similarities and differences, which is perhaps to be expected if similar models of urban

administration (the British model) are applied in different cultural contexts. However it may be noted at this stage that analysis of policy on urban dogs can be aided by a naturalistic perspective since in both situations the dog continues to exist only with human protection. In India this protection might be said to be afforded because of a belief in the unity of life while in Australia, in policy terms, it is afforded because of a belief in the continuity of property. A naturalistic perspective goes some way towards blending the two views since it caters for both the connectivity of species and for the anthropocentricity of public policy. Field work in Jaipur was valuable for the insights it gave into the free interactions of human and canid societies in the urban environment. The experience gave the writer sufficient confidence to roam outside of western perceptions of the dog as an object.

The challenge to appreciate a naturalistic perspective has been stated comprehensively by Richard Alexander of the Museum of Zoology, University of Michigan who has studied the evolution of species since the 1950s:

> If, as I believe has been amply demonstrated, organic evolution is the explanatory background for all traits of life, then human self–understanding adequate to the proposition of long–term survival depends to some extent on self–analysis in evolutionary terms. Yet evolution is a process studied extensively and seriously by a miniscule proportion of the earth's population, and it has been applied extensively to human self–understanding by an even smaller group of individuals. Additional efforts may literally be a survival imperative (Alexander 1990: 2–3).

Much of the early discussion in this thesis is speculative but it does take up Alexander's challenge. Alexander points out, 'the more important is a biological hypothesis, the less likely we are to find simple, satisfying

tests'(1990:2). Nonetheless, a naturalistic perspective is arguably less speculative than either the assertion of human dominance over animals or the deliberate creation of domestic animals by human beings.

The thesis has been structured in a straightforward way to test its hypothesis. Chapter 2 uses a naturalistic perspective to suggest how a sense of separation from other animals, defined here as 'otherness'[6], may have evolved in people, to be represented in public policy as a tactic of human survival and consequently as a way of thinking about animals. A critical look is taken at the two creationist models mentioned above. The chapter argues that there is a link between human evolution, traditional rule making, and the reaction to both which occurred in modernist thought. Chapter 3 argues that the dog crept under the pale of otherness and gradually fitted into the ecological niche of human organization. Like the human being, the dog was shaped by a novel ecological niche, the human home base. Co–evolution of the dog and human beings began such that a biological interdependency evolved in each species. Chapter 4 cites empirical assessments of the human–canid bond. The assessments indicate that a complex bond does exist which cannot be explained away simply as human ownership of an object. This complexity is argued to support the hypothesis of the thesis. Chapter 5 discusses practical implications of a naturalistic perspective for policy makers. Reference is made in particular to the

[6] It is appreciated that 'otherness' is an illusive concept which has been the subject of considerable philosophical debate. Such debate is beyond the scope of this thesis. The word has been appropriated in this thesis on fairly simple biological terms.

proceedings of a series of conferences in urban animal management in Australia. These conferences have been held annually since 1992. They have been productive forums for the exchange of ideas and for the development of perspective in this important area of local governance. Most ideas put forward recognize the value of the dog as a companion of people, but do not proceed further than treating the dog as having economic value derived from its utility for human well being. In Chapter 6, the conclusion reached is that a naturalistic understanding of human beings and dogs in the urban environment is of benefit to public policy makers.

Chapter 2

Virtual unreality: the evolving discourse of control

> The taxidermist, Vasu, to his landlord, the printer Nataraj: '... I hope you appreciate now what an amount of labour goes into the making of these things. We have constantly to be rivaling Nature at her own game. Posture, look, the total personality, everything has to be created ...' (Narayan 1961:50).
>
> '... I've spent a lifetime trying to make you see the difference between a zookeeper and a taxidermist,' he said with weariness as if I'd been trying to place him among an inferior caste of men. 'Anyway, it's easier to rear a dead animal. For one thing, it saves complications with a landlord' (Narayan 1961:123).

Introduction

The taxidermist, Vasu, would be well understood by many makers of public policy about urban animals. Unfortunately for them, the urban dog is not a stuffed object which looks like an animal. It is an animal, and so are we. Even if makers of public policy attempt to ignore the complexities of urban animal management by publishing unenforceable legislation, the effects of the policies that they make are only too real. Policy making therefore warrants a serious approach. However, often only rule making is delivered. A professor of a public policy program in Australia thought the subject of this thesis was a hoax. Public policy objectifies animals and this flies in the face of reality as constructed within a naturalistic perspective. This chapter explores how objectification can be explained using a naturalistic perspective. The discussion is speculative but is within the respectable concept of natural selection.

Evolution by exaptation (where prior adaptations form the basis of change[7]) has enabled relatively recent and rapid development of human groupings, particularly through cultural behaviour. In the latest few millennia, such behaviour has often been expressed as the systematic exploitation of animals. However, a naturalistic perspective reminds us that the gradual forces of natural selection are continuously at work. We are an animal which is evolving as are the animals in our cultural environment. Culture has a biological basis. Charles Darwin's theory continues to force a reappraisal of fundamental thinking about the relationship between human beings and other animals.

This chapter will have achieved its purpose if the reader accepts that there is a biological dimension to public policy making about animals such as the human being and the dog. Rule making is one of the survival tools of the human animal. The chapter prepares the ground for the discussion in Chapter 3 of co–evolution of an inter–dependency of these two urban species. In this thesis, 'co–evolution' is used to convey a sense of two animals evolving together and merging. A more usual use of the term is to describe convergent evolution where, for example, carnivores, regardless of their evolutionary stems, develop similar teeth.

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[7] 'Independence from the adaptive drive of evolutionary history is, as Gould and Vrba point out, important for the understanding of the effect of evolutionary changes. Nowhere is this more so than for human behavior generated by that infinitely flexible and subtle organ, the brain. Their conclusion is that most, if not all behaviour, is exapted rather than adapted' (Gamble 1995:5 citing Gould S.J and Vrba E.S., 1982. "Exaptation: a missing term in the science of form", *Palaeobiology*, 8(1): 4–15).

The chapter comprises two sections to link the language of evolution and of traditional rule making. The first section deals with the evolution of people while the second section treats traditional rule making from a naturalistic perspective. In the second section, the discussion turns to elements of modernist thought and then returns to a naturalistic perspective made possible by Darwin.

The argument which is developed in this chapter may be summarized as follows: public policy making is a survival technique of the human species and so may be explained using a naturalistic perspective. The case study used is the Biblical process of rule–making which deliberately institutionalized otherness by legitimating the concept of dominion over animals, ameliorated perhaps by the concept of stewardship. In the modernist reaction to traditional rule making, animals became valued only as instruments created by human ingenuity for human use. When these policy systems have been applied, as in modern western models, there has been a negative impact on the appreciation of the biological relationship between human beings and other animals in the urban environment, such as the dog.

Section one: the evolution of otherness

> ... the question is what distinguishes man *among* the animals, not what distinguishes man *from* animals (Midgley 1978a:xiii, 203, her emphasis).

Introduction

The quotation from the philosopher Mary Midgley neatly identifies two human traits: questioning and obfuscation. It will be seen later that the philosopher René Descartes epitomizes these traits: he defined our existence as rational beings but in doing so conveniently sidelined other animals. Descartes knew this was expedient and he set the scene for centuries to follow.

A bias against other animals can be explained biologically. A naturalistic perspective provides an explanation for the concept of othering of non–human animals. It is argued below that othering is a heritable trait which, while undeniably successful in enhancing the survival of many animal groups, in the case of the human species ran away to extreme lengths with the advent of ecological dominance and the process of cultural evolution. The result has been the institutionalizing of an anthropocentric attitude. This attitude endures in modern western public policy about urban dogs, expressed through the discourse of control, because it has a utility for rule making.

This chapter and Chapter 3 develop the basis for the argument that such an approach is simplistic and anthropocentric. The complexity of the

human–canid relationship in the urban environment is not addressed adequately by public policy makers. Chapter 4 demonstrates how complex the relationship is. The anthropocentricity of public policy can be understood as an instinct that evolved.

This chapter refers to important discoveries and new techniques which, in only the past two decades, have added markedly to knowledge on the evolution of human beings and other animals and to the evolution of human traits such as speech. In many cases, established ideas have been turned on their heads. The chapter begins to import new ideas from palaeontology and other disciplines into the field of development administration. The synthesis is not hypercritical: evolutionists seem to love controversy and authors are linked here in ways in which they would not be comfortable. Despite the school to which they belong, the thesis attempts to import the ideas for which the authors are respected and which add to a naturalistic perspective. The process of importation is begun with a sense of anticipation which was well expressed by Peter Rowley-Conwy:

> These three lines of evidence, genetics, linguistics, and archaeology – can, therefore, be brought together to tell a single, coherent story ... if these three lines of evidence are not disproved by further work, we are on the threshold of a colossal break through in our understanding of ourselves (Rowley-Conwy 1993:144-5).

The chapter traces the transition of hominids from being prey animals to being organized predators in the form of *Homo*. The trauma of being preyed upon was indelibly engraved in the psyches of these relatively defenseless but intelligent animals in a way that was heritable. The transition from being

prey animals was so successful that the evolving human beings at some point became ecologically dominant. In time, our ancestors needed to fear extermination only by their own, or closely related, species. The hypothesis of ecological dominance was developed by many authors and the runaway process is explained by Richard Alexander:

> perhaps only humans themselves could provide the necessary challenge to explain their own evolution ... they in effect became their own principal hostile force of nature, explicitly in regard to evolutionary changes in the human psyche and social behaviour (Alexander 1990:4).

Christopher Wills, a geneticist, reviewed discussion of the uniquely rapid evolution of human beings and argues for a 'runaway brain' whereby a 'brain culture feedback loop' (1995:140) began to drive the evolution of even our quite distant ancestors, the australopithecine. In a nutshell, intelligence is an adaptation to environment challenges but of its nature creates greater complexity in the environment through, say, tool making or the capacity to live in organized groups. The deluge of information arising from this complexity then has a selective effect for greater intelligence.

Even when ecological dominance occurred, however, emerging human beings brought their genetic baggage along with them: the human psyche did not lose the sense of otherness which had served as a survival trait. Ecological dominance arguably occurred quite late in human pre–history and not before the evolution of *Homo sapiens* (Slurink 1993:265–73) so there was ample time for an instinct for systematic othering to evolve.

The discussion then turns to the institutionalizing of otherness. The discussion inevitably becomes located in a western history since it was in the west that the science of palaeontology was created and because western attitudes influence public policies about urban dogs.

The philosophical roots of the propositions in this thesis are in evolution of species through natural selection. Thus at core is the belief that Charles Darwin's[8] basic tenets hold true so, at this point, a brief discussion of his theory of natural selection of heritable characteristics is warranted.

The theory of evolution by natural selection

Charles Darwin theorized that evolution occurred through a process of natural selection. The principle of natural selection is the 'differential reproduction of variants' (Doolittle 1987:61). Darwin's genius was the crest of the wave of evolutionary thought that began in Europe in the late eighteenth century and has been described by Loren Eisley (1961) in *Darwin's Century*. It was Darwin's mind which was capable 'of taking a great body of diverse data and relating it within the confines of a single abstraction' (Eisley 1961:3). The theory of natural selection was controversial at the time. It challenged the notion of a universe designed in detail by God with human beings as the pinnacle of God's achievement and it placed squarely in the public view the continuity between species

[8] Alfred Wallace published jointly with Darwin on the theory of natural selection, but deferred to Darwin as the more radical philosopher .

(including human beings and other animals) and between the past and the present. That controversy is too well known to need further attention here.

In *The Origin of Species, by means of natural selection or the preservation of favoured races in the struggle for life* Darwin (1901b) provided an historical sketch of the naturalistic ideas of the day. He acknowledged his debt to the many thinkers who were involved. He drew much of his inspiration from the artificial selection[9] of traits by breeders of domestic animals, noting that naturalists who investigated evolution had tended to ignore domestic animals. For him, evolution was the consequence of 'one general law leading to the advancement of all organic beings, — namely, multiply, vary, let the strongest live and the weakest die' (Darwin 1901b:364):

> If such [variations] do occur, can we doubt (remembering that many more individuals are born than can possibly survive) that individuals having any advantage, however slight, over others, would have the best chance of surviving and of procreating their kind? On the other hand, we may feel sure that any variation in the least degree injurious would be rigidly destroyed (Darwin 1901b:98).

Darwin named this principle 'Natural Selection' (1901b:76) to differentiate the process from artificial selection, although he also noted the utility of Herbert Spencer's phrase 'Survival of the Fittest' (1901b:77) as a more accurate and sometimes equally convenient description. Actually, 'survival

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[9] In fact, 'domesticatability' itself could be argued as a trait subject to natural selection, because of human ecological dominance, and so the purposefulness of the animal breeder can be looked at askance as a presumption. This idea is discussed more fully in the next chapter.

of the fittest' is clearly tautological and often used dogmatically (Holbrook 1978:197). The concept of natural selection might often be viewed more productively as 'survival of the fitting' (Leyhausen 1989:10)[10] as this ecological view better explains the processes of adaptation and exaptation.

According to Darwin, survival itself is evidence of an equilibrium made dynamic by the 'struggle for existence' which occurs because 'each organic being is striving to increase in a geometric ratio' with the result that 'more individuals are produced than can possibly survive, [and so] there must in every case be a struggle for existence, either one individual with another of the same species, or with the individuals of distinct species, or with the physical conditions of life' (Darwin 1901b:79, 96).

Darwin was not consistent. Darwin personified Nature, casting her as female, rational and thorough in her application of natural selection. He allowed in the 'grandeur of this view of life [natural selection]' for a 'Creator' of original life (Darwin 1901b:670). Nonetheless, his clear message is the role of chance in evolution (Darwin 1901b:153, 244) and it is this idea which has revolutionized thinking since *Origin of Species* was published.

Darwin noted that the struggle for existence includes dependence of one being on another and refers not only to the life of the individual but to

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[10] Leyhausen (1989:1-26) suggested that 'culture is not just a question of either adapting man to the environment or of adapting the environment to man. The heart of the matter is: Man does the adapting in either case ... It is not survival of the fittest which promotes evolution but survival of the fitting' and 'culture ... is the direct result of pre-adaptation and could not exist without it'.

its success in leaving progeny (Darwin 1901b:78). The struggle for existence is often most vigorous between species of the same genus. The survivors as a group become defined by extinction of the non-survivors (Darwin 1901b:593). Darwin considered evolution as a gradual process. He considered that natural selection applies to social communities and even to instincts (Darwin 1901b:256, 321, 358).

The above points are developed further in this thesis to argue that early human beings and dogs (and similarly many other organisms) survived and evolved as a complex of species, not only as individual species.

Darwin's theory of evolution by natural selection was refined with the discovery of genes as the basic units of inheritance. Although the results of Gregor Mendel's experiments with inheritance of characteristics in plants were published in Darwin's lifetime, Darwin apparently was not aware of them (Haynes 1987:8, Degler 1991:20).

When genes were discovered and explained this century, the theory of natural selection could be synthesized afresh. Neo-Darwinism has been described by Stephen Gould:

> Its foundation rests upon two major premises: (1) Point mutations (micro-mutations) are the ultimate source of variability. Evolutionary change is a process of gradual allelic[11] substitution within a population. Events at broader scale, from the origin of new species to long-ranging evolutionary trends,

[11] An allele may be described, briefly, as a gene which could occupy the same position on a chromosome, cause different effects, and can mutate to another gene (Abercrombie, Hickman and Johnson 1980).

> represent the same process, extended in time and effect – large numbers of allelic substitutions incorporated sequentially over long periods of time. In short, gradualism, continuity and evolutionary change by the transformation of populations. (2) Genetic variation is raw material only. Natural selection directs evolutionary change. Rates and directions of change are controlled by selection with little constraint exerted by raw material (slow rates are due to weak selection, not insufficient variation). All genetic change is adaptive (though some phenotypic effects, due to pleiotropy, etc., may not be). In short, selection leading to adaptation (Gould 1980:119–20).

As a note of explanation, phenotypic effects are those characteristics manifested by an organism in contrast to its genes (genotype). The phenotype may differ in organisms with the same genes, due to environmental effects, and the same phenotypes may exist with different genes (Abercrombie, Hickman and Johnson 1980), as in convergent evolution where the dentition of carnivores comes to resemble each other even though the animals evolved from different stems. A pleitropic gene is one which affects more than one characteristic in the phenotype (Abercrombie, Hickman and Johnson 1980).

One of the most popularly known of the new synthesizers is Richard Dawkins who views the struggle for existence from the perspective of genes competing with others for a place on the chromosome. In *The Blind Watchmaker* (1986) he argued that this is the only perspective necessary to consider natural selection and he restated Darwin's concept of gradualism. Of particular relevance to this thesis are Dawkins' ideas of the extended phenotype and of memes (Dawkins, 1982 and 1989), the latter of which will be explained later.

Other evolutionists have baulked at reducing evolution by natural selection to the gradual outcomes of the cause and effect of struggle and survival. They do not see evolution as seamless though they admit the importance of selection and adaptation for survival of the organism. These evolutionists have sought to enhance the theory of natural selection.

This thesis does not have the scope to critique the extensive literature on the debate. Nearly every comment on evolution seems to attract critics. What the thesis does do is import some recent and accessible ideas, regardless of the school from which they come, from the evolutionary literature for consideration by urban animal managers. The main ideas chosen (as well as Dawkins' ideas above) for the thesis are: cooperation to compete, punctuated equilibrium in evolution and exaptation, and natural selection for colonization. These ideas are dealt with briefly here and will recur in the following sections and chapters.

Richard Dawkins' (1982) idea of the extended phenotype, whereby the genes in one organism effect heritable changes in the behaviour and morphology of another organism is an elaboration of Darwin's statements described above. This thesis argues that as human beings and dogs co–evolved, they merged to some extent. Human beings lost much of their sense of smell but gained the ability to enunciate and so organize well. Dogs lost much of their wolf identity with its advanced society and physical prowess but gained a niche in human organization. The benefits to the dog may have been chiefly protection from predators and energy saving

opportunities to scavenge rather than the necessity to hunt. As extended phenotypes, the pair are demonstrably better survivors than, say, the Neanderthal or the wild wolf. Dawkins' idea of memes will be discussed later.

The idea of cooperation to compete as a factor in evolution was put forward by Richard Alexander (1990) to explain the unusual fashion in which hominids have evolved. He thought human beings used social cooperation to compete as individuals and as coalitions with other human groups. In fact he argued that such cooperation became an imperative of survival as the race towards intellectual complexity escalated. If this broad idea has appeal, then inclusion of an evolving dog in the human equation should be acceptable.

There are long periods of stasis followed by bursts of change in the fossil record. The explanation put forward is punctuated equilibrium in evolution. During the periods of stasis, it is contended, potential for change accumulates in organisms and populations which does not appear in the fossil record. This potential may be expressed rapidly if the environment changes. This idea supplants the notion of progress inherent in the modern synthetic view of evolution. Stephen Jay Gould is a major proponent of punctuated equilibria. He argues (Gould 1985:2–12) that these potentials are realized and are expressed as discontinuities in evolution. Because of this, long term evolution can be best visualized as occurring in tiers rather than as a gradual continuum. In the first tier, survivors are those which successfully

compete by adapting to the existing environment. The second tier is where punctuated equilibrium occurs and exaptation (which will be explained shortly) is the chief mechanism. The third tier accommodates mass extinction of species in events which can be observed in the fossil record and which greatly affect the subsequent evolution of surviving species.

The second tier, this thesis argues, is where much of the co–evolution of human beings and dogs can be described. Indeed, '... the immediate adaptations of organisms within populations are not the only stuff of long-term evolution' (Gould 1985:6). The concept of exaptation is associated with punctuated evolution. Adaptation to one environment can be an exaptation in another. Exaptation is a term argued for in evolutionary discourse by Gould and Vrba (1982:4–15, cited in Gamble, 1995:5). The concept permits freer discussion of evolution. Not all features in a population may be adaptive at the time but they are sources for future change. For example, feathers which were adaptations to cold are also, in a changed environment, exaptations for flight.

Exaptation explains the colonization of the world by *Homo sapiens*, according to Clive Gamble, author of *Timewalkers* (1995). Behaviour of hominids evolved to maximize use of the environment. Dominant males and the females occupied a core of territory while sub-adult males explored its periphery, bringing data home which benefited the group and also determined whether the group should move on. This, according to Gamble, is an adaptation to scarce resources. On this basis, *Homo erectus* spread

over a large part of the world only to retreat in successive ice ages to warmer refuges. The situation would have remained in equilibrium except that this adaptive behaviour was an exaptation for the global colonization deliberately undertaken by more intelligent *Homo sapiens* who had the organization and technology to establish in even inhospitable regions. The process of colonization is still occurring, even unto space, and is a trait that has evolved through natural selection. It will be argued in Chapter 3 that the southern wolf that evolved into the dog may well have accompanied the colonizers.

Above, then, are the naturalistic tools which are used in this thesis. All are derived from Darwin's philosophy which in turn reflected a change in the way human beings were observing their world. The revolution continues, though sometimes turning clockwise, other times anti-clockwise.

Out of Eden

Small and relatively defenseless australopithecine evolved into *Homo* species (Aiello 1994:399). For convenience, a rough guide to the sequence of events which will be discussed is presented below, in Table 2, derived from Richard Leakey (1994). Time periods may not coincide exactly with those of other authors cited later, as most are conjectural and debatable.

Table 2: **Guide to stages in human evolution**

10 to 5 million years ago	*Origin of bipedalism in Africa*	1 million to 100,000 years ago	*First use of fire, major advance in tool manufacture (the Mousterian age), origin of modern human beings*
4 to 3 million years ago	*Earliest known fossils of human ancestors*	100,000 to 10,000 years ago	*First evidence of art, agricultural revolution*
3 to 2 million years ago	*Origin of brain expansion, earliest known stone tools (found in Africa)*	10,000 years ago to the present	*First cities, industrial revolution, technological revolution*
2 to 1 million years ago	*Homo erectus expands out of Africa into Asia, major advance in tool manufacture (the Aechulean age), evidence of meat eating*		

Source: Leakey 1994:preface.

Of the known hominid species, the oldest remains so far known were found in 1993 in Ethiopia and named *Ardipithecus ramidus*, to indicate the

likely branching of African apes and proto–human beings at this point (Stringer and McKie 1996:13). *Ardipithecus ramidus* occurred about 4.5 million years ago.

Fossils of the next oldest known hominid, *Australopithecus afarensis*, are about 3.3 million years old. Fossils of *A. afarensis* were first discovered in 1978 at Laetoli in Tanzania and at Hadar in Ethiopia.

Yves Coppens was among those excavating in Ethiopia. He describes how the australopithecine might have evolved (Coppens, 1994:62–9). The vast tectonic movements which formed the Rift Valley and associated geographical structures, physically split the climate of the area into wetter and drier regions. The ancestors of the hominids were also split, those in wetter regions evolving into African apes, while those in drier regions to the 'east of Eden' evolved into hominids (eventually to become human). Remains of fossilized ulna and humerus indicate that these hominids climbed trees, but also walked on two legs. The males weighed less than 50 kilograms. During the period 3–3.9 million years ago, this hominid species appears to have remained stable (Kimbel et al. 1994:449; Aiello 1994:399) and the period of stasis, when bipedalism was not accompanied by significant brain expansion, may have lasted as long as 1.7 million years (Stanley 1992:237).

Steven Stanley (1992:237–47) offers an explanation for this stability. Hominid arboreal capacities allowed them to gather food from the trees. Of probable greater importance however is the likelihood that the trees

provided safer sleeping places and refuges from the large, swift, social carnivores which preyed upon the hominids. He argues that the hominids were under a great deal of predation pressure. Among the predators were two hyenas and three sabertoothed cats which would have outmatched the australopithecine in speed, strength, endurance and weaponry. The australopithecine did not have the formidable canine teeth of baboons, for example, but could probably use simple weapons such as sticks. It is quite likely that leopards also preyed on hominids (Brain 1981:273).

Stanley's (1992:237–47) argument is that this largely arboreal lifestyle placed restrictions on the range of cranial developments that could evolve. Brain development is not possible without an increase in the size of the cranium. A very large cranium could not develop in an animal which resorted to refuges in trees because the necessarily heavy head would interfere with agility in trees. Large headed infants would require a long period of dependency, which is not commensurate with survival of their mothers in an arboreal existence. Marked postnatal brain growth in arboreal progeny most likely could not occur because it would imply a long and highly immature neonatal state, with the offspring clinging to the mother and so reducing her chance of survival. The above matters were not issues for survival while trees provided refuges.

The hominid's situation changed with the climate: forests in Africa contracted and the arboreal australopithecine were obliged to adopt a terrestrial existence and face the dangers of the savannas. Their plight must

have been desperate, but a terrestrial existence created possibilities: the evolution of larger crania coupled with 'encephalization through the evolution of delayed development' of infant hominids became feasible (Stanley 1992:237). Indeed he concludes that 'pronounced juvenile encephalization can evolve only after human ancestors were fully terrestrial' (Stanley 1992:253). We had begun to think our way out of trouble.

Thus when the forest refuges of the relatively defenseless australopithecine receded, among the evolutionary results for hominids was the development of intelligence through higher encephalization quotients. Gould (1986:184) showed that the encephalization quotients (a measure of the relationship between brain volume and body weight) for the australopithecine line of *A. africanus* and *A. afarensis* were higher than for anthropoid apes, but increased at roughly the same rate. However, the *Homo* encephalization quotient is dramatically greater than for either of the australopithecine. Susan Cachel (1975:197) suggested that the stimulus for this brain expansion might have been the arrival in Africa of the large social canids such as *Lycaon* the wild dog. That is, with the arrival of new social carnivores in Africa about that time, human ancestors evolved further along the encephalization path, eventually becoming the various species of large brained *Homo*.

However, evolution of the hominid encephalization quotient should not be viewed in isolation. The need for a large head to accommodate the increasing brain has evolutionary significance also. There is a limit, in a

terrestrial animal, to which the pelvic channel can widen to pass a large headed neonate without interfering with the locomotion and hence survival of the mother. Waddling away from a fight simply would not do, on the African savanna. The solution which evolved is the birthing of the infant well before it reaches self sufficient development. Gould (1986:66–75) argues that neoteny (retarded somatic development) is a fundamental event in human evolution. The remarkable extent to which crania and brains in human infants continue to develop after birth, suggests that the same process occurred in our ancestors. Lengthy dependency of the young dictates that the adults develop formal social systems based on sharing which in turn is possible because bipedal animals can use tools and carry food back to a home base.

Australopithecine of various species and *Homo* species coexisted for some time (Slurink 1993:267). These included *Homo habilis* and *H. erectus*, both with larger brains than the australopithecine. The situation as explained by Cromer (1993:51) is that *H. erectus* replaced *H. habilis* about 1.6 million years ago and, about 1 million years ago, was the first hominid to leave Africa. Cromer argued that *H. erectus* probably had sufficient brain size to develop strong social controls which allowed larger groups to be formed. Such controls were thus survival strategies against the social carnivores. It is argued in the next section that these social controls were the first step towards the institutionalization of otherness which remains at the base of public policy about urban animals.

This section, however, uses a naturalistic perspective to speculate that the sense of otherness was inherited from the ancestors of *Homo erectus* which, in turn, passed othering on to *H. sapiens*. In the following paragraphs the argument is developed that the severe selection pressure of predation on hominids resulted in instinctive othering of potential enemies, and a mechanism by which such an instinct might be inherited is described.

It is difficult to guess when *Homo* might not have felt threatened by other species. Perhaps such situations became feasible once ecological dominance had been achieved, probably around the emergence of *H. sapiens*, as mentioned in the beginning of this chapter. The evidence along the palaeontological trail is exceedingly sparse in this regard. Early palaeontologists focussed markedly and even frantically on anthropocentric questions such as human origins or tool use. Little priority was given to assessing non–human remains except where these were predators on our ancestors or were food for them. Even where non-human remains are described, the results may be published as annexes to main reports (see Wahida 1981, for example). Simon Davis, a specialist in the study of prehistoric faunal remains, noted: 'zoo-archaeology as a discipline in its own right has only become established during the last 20–30 years' (1987:23). Katherine Boyle (1990:28) also commented on the lack of attention given to describing carnivores associated with early human remains. Her criticism is that the focus of palaeontological work (including her own) on animal remains has been on the role of herbivores as food for human beings.

Nonetheless, there is evidence which suggests that the association between carnivores (which could have been dogs or their ancestors) and *Homo* is at least 60,000 years old. This evidence is from sophisticated analysis of digested bone in faecal remains of prehistoric carnivores (Horwitz 1990:97–106).

As already mentioned, palaeontological analysis of *Homo* remains has often been anthropocentric to the point of carelessness. Anthropocentricity can be explained using a naturalistic perspective but also is argued in this thesis as obfuscating public policy about urban dogs. For this reason, a short diversion is made to give an example of anthropocentricity in palaeontology which had far reaching effects.

Most early palaeontological work was undertaken in Europe (including the United Kingdom) in a frantic search for the 'missing link'. The search often was conducted in an atmosphere of nationalistic, professional and personal jealousy between palaeontologists. Trinkaus and Shipman (1993), as well as providing a comprehensive history of the search for Neandertal[12], also described the effect that the personalities of the scientists involved and their sense of national rivalry had in warping the priorities and scientific detachment of participants. A further complication to free expression was the Biblical orthodoxy that the world had been created some 6,000 years ago.

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[12] Trinkaus and Shipman (1993) argued this is more correct spelling than 'Neanderthal'.

As a result, there were several cases of hypocritical and even fraudulent behaviour. Palaeontologists wished to substantiate beliefs or sought fame for themselves or their organizations. Among the best known frauds is the Piltdown Hoax, one of the principal victims of which was Raymond Dart.

The story of Raymond Dart

This story is given as an example of anthropocentric conditioned thought on human origins. As will become clear in Chapter 3, thought on the origin of the domestic dog was similarly conditioned. Degerböl (1961:35–55), who first discussed the finding of 10,000 year old dog remains at the Maglemosian site in Denmark in 1927, commented that these dogs were unlikely to represent the first stage in the domestication of the dog. He repeated the comment in 1961 when he discussed a similar find of even older dog remains at Star Carr in Yorkshire, but he also noted: 'in recent times the wolf, *Canis lupus*, is generally acknowledged as the ancestor of the dog, on the basis of the Maglemosian dogs' which were thought to be used for food (Degerböl 1961:46)[13].

In South Africa, in 1925, an Australian medical scientist, Raymond Dart, discovered the skull of a small brained, carnivorous ape with human–like teeth (Dart 1959). The discovery was published in *Nature* in 1925 under the title 'Australopithecus africanus: the man-ape of South Africa'. In 1929

Dart claimed that: '*Australopithecus* did not seek food and protection by climbing in trees. He had hunted his food in the open and was a shell-cracking, bone-breaking, flesh-eating ape' (1959:104). Later finds suggested that *Australopithecus africanus* was a weapon wielding, tool making cannibal. Dart claimed to have discovered the Bone Age of humankind, which he called the Osteodontokeratic Age since teeth and horns also were used as tools and weapons.

At the time, Dart's claims for *Australopithecus* were not accepted by the Royal Society. Among the reasons was that 'the missing link' had already been found in gravel beds at Piltdown in Sussex in 1912 (Tobias 1992:243–93).

Piltdown Man was much later proven to be a hoax. The hoax had been successful partly because it was carried out with great care (specimens were planted in the gravel beds as early as 1908), but also because the finding was as expected. The perpetrators of the hoax had fabricated a large brained hominid with an ape-like jaw, which indicated that ancestors of human beings were vegetarian, which fitted the Biblical image of a gentle ancestor.

Phillip Tobias quotes Sir Arthur Keith: 'That we should discover such a race [as that of Piltdown], sooner or later, has been an article of faith

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[13] Clark (1971:73) reconsidered the Star Carr finds and considered that it was more likely that the remains were derived from wolves, rather than dogs.

in the anthropologist's creed ever since Darwin's time' (Tobias 1992:244). Such certainty of sentiment in the scientific establishment of the day meant Dart's findings were not given due consideration at the time. The certainty of those anthropologists had nationalistic overtones too, according to Kenneth Oakley who, among others, exposed the fraud in 1953. Oakley believed that among the reasons the hoax was successful in England, was that it had been 'assumed that the first man was an Englishman!' (Oakley, quoted by Ardrey 1963:27). Keith became a Fellow of the Royal Society partly because his reputation was made by the Piltdown 'discovery'. Keith vigorously and authoritatively rejected Dart's claims, and embittered Dart. Tobias considers it likely that Keith in fact was the scientific accomplice of the perpetrator of the Piltdown hoax and his actions 'held up the advance of palaeoanthropology for a quarter of a century.' (1992:243, 260).

On the other side of the Channel the Piltdown finds were regarded cautiously. The French anthropologist Marcellin Boule (1923:157-75) thought that the British were confusing two species in the excavation, but did not appear to suspect a hoax, particularly as one of his past students, Père Teilhard de Chardin, visited the site in 1913 and found a simian tooth. The Piltdown findings did not fit with the many discoveries occurring in Europe in the period and under the weight of accumulating evidence, by

1938 *A. africanus* had come to be recognized as the 'missing link no longer missing' (W.K. Gregory, quoted in Dart 1959:75)[14].

Although Dart thus eventually gained recognition as the discoverer of the missing link, his belief that *A. africanus* survived because they armed themselves with bone weapons allowed the concept of 'man–the–hunter' to be constructed. According to the feminist analysis of Donna Haraway (1989:186–230), this idea had far reaching social consequences. Haraway attributed the deliberate construction from the 1940s through the 1960s of man–the–hunter to the physical anthropologist Sherwood Washburn, his associates and students under the influence of Dart's hypothesis of the missing link being carnivorous and possibly cannibalistic. In 1948 Washburn had met Dart and his colleague Robert Broom in South Africa and become convinced of the 'revolutionary significance of the South African fossils' (Haraway 1989:206). Haraway argued that Washburn's later

[14] The concept of an evolutionary chain may have been popular at the time, but is based on the idea of evolution as progress and with the human being as its pinnacle. As Gould (1986: 56-62) pointed out, 'missing link' would better be termed 'missing rung' if the analogy of ascent by an evolutionary ladder is used. In fact, Gould was of the opinion that it was more productive to consider evolution to be a series of branches. Gould concluded succinctly: '*Homo sapiens* is not the foreordained product of a ladder that was reaching toward our exalted estate from the start. We are merely the surviving branch of a once luxuriant bush' (1986:56–62).

writings, couched in social evolutionary terms, greatly influenced a body of thought in which:

> Early Man in Africa ... was conceived as the prototype of the United Nations' post-World War II universal man, in the ecological conditions of Cold War, global nuclear and urban proliferation, and struggles over decolonization. In that context, Early Man in Africa and UNESCO Man became Man the Hunter, the guarantor of a future for nuclear man' (Haraway 1989:187).

The portrayal of men as hunters in Washburn's narrative suited proponents of unity of human races, but issues of gender and cultural differences became submerged. While hunting implied a form of social cooperation, the image portrayed was strongly focussed on predatory masculinity and so was fraught with moral dilemmas if applied in any humanitarian context (Haraway 1989:188–9, 216).

Of more general impact probably was the work of Robert Ardrey. Ardrey was a dramatist who turned to publicizing his view of human evolution in a series of widely read books (see, for example, Ardrey 1963; 1970; 1977) which drew a connection between fossil finds in African caves and political upheavals which occurred in the world during the period 1960–1980. His past experience and obvious skill as a dramatist served him well. In his *African Genesis: a personal investigation into the animal origins and nature of man*, Ardrey concluded that Dart was correct – early man was a hunter – and he accused the scientific community of hiding behind the 'hyaena alibi' explanation for damage to australopithecine skeletal fossils, which claimed that *A. africanus* was merely prey (1963:293–311).

In *The Hunting Hypothesis* Ardrey developed the argument further, and sought to define human beings as blood stained social predators:

> If among all the members of our primate family the human being is unique, even in our noblest aspirations, it is because we alone through untold millions of years were continuously dependent on killing to survive (Ardrey 1977:16).

Ardrey was influenced by Carveth Read's *The Origin of Man* (1925a). In the preface, Read acknowledged the influence of a hypothesis by Morris (1900) that human beings adopted the life of hunters and so became differentiated from the vegetarian apes. As can be imagined in the paradoxical scientific climate prevailing around Piltdown Man, Morris' idea was unfashionable and, since it could not be tested (at that time), it was not taken seriously (Read 1925a:1).

Read built on Morris' idea. He analyzed human anatomy and behaviour and developed a hypothesis for the origin of humankind. Among the characteristics he noted was a social organization 'like that of wolves'. He differentiated the hunting pack (a hierarchy searching for food) from a herd (organized defensively). The hunting pack psychology included: thrill of the chase; passion of the kill; variable gregariousness; lack of sympathy for and aggression towards all those outside the pack; territoriality; leadership and loyalty; subjugation to the needs of the pack; a hierarchy; and capacity for strategy (Read 1925a:9–54).

Ardrey's interpretation of Dart's findings was that they substantiated the theories of Morris and Read. In short, as social predators we developed

concepts of cooperation, defense of territory, economics and a sense of adventure. Our developing brain enabled us to invent ways of handling different ecological niches in the changeable Pleistocene. The brain as a survival tool ranked equally with the upright posture and human foot that braced our frame and enabled us to use weapons effectively (Ardrey 1977:111–44).

Writers such as Ardrey and social scientists such as Washburn may well be criticized for extrapolating the hunting hypothesis into arguments that the present behaviour of human beings is determined by their past behaviour as social predators. Such simplistic reductionism was roundly criticized by Samuel Barnett (1988:Part 2) who referred to the construction of '*Homo pugnax*' and to Ardrey as an extreme proponent of that particular myth. For Barnett, the infinite diversity of human beings and society is not reducible to simple images which 'obscure understanding and obstruct action' (Barnett 1988:301). Of course such criticism is intellectually worthwhile, but can also be a negative reaction to conjecture. It must be said that Ardrey at least drew public attention to issues arising from the discovery of fragments from our evolutionary past.

Imagining the worst

As a result of the Piltdown hoax, Dart suffered rejection by the scientific establishment but then was rediscovered by popular opinion. It is therefore ironic that his work was thrown into doubt for a second time.

Dart had been among the first to analyze bone assemblages (taphonomy) from African caves, but he was essentially an amateur palaeontologist and the finds were opportunistic. Charles Kimberlin Brain (1981)[15] repeated the process of investigation rigorously, using a grid system and digging through layers of cave detritus. He also studied and compared the feeding habits of various living predators. He realized that survival of bones as fossil relics is due largely to the nature of the bones themselves and to the feeding habits of the predators. For example, if it is the nature of predators to eat particular bones such as vertebrae, these will not appear in the fossil record. Brain's conclusions are quite different to Dart's. Brain is of the opinion that, at certain levels, finds of *Australopithecus* in the caves indicated that they were prey, not resident predators.

Brain's work is compelling because of its thoroughness. If Brain is right and the now terrestrial hominids were not only prey, but were preyed upon by specialized predators which had adapted for that particular purpose,

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[15] Although Brain re-examined Dart's osteodentokeratic culture theory by reviewing a series of 39 papers published between 1949 and 1965 and concluded that Dart's extrapolation that our ancestors were blood thirsty was not substantiated by taphonomic evidence, he did acknowledge that Dart's claims had, at least, stimulated research into hominid cultural activity (Brain 1989:291–7).

the inexorable approach of every night must have been a terrifying experience for the hominids. Even if they did take refuge in caves they were accessible by carnivores.

Ardrey wondered what the African night would be like to a defenseless hominid and concluded that they must have been armed (1963:285). The well known ethologist, Konrad Lorenz, understood the terrors of the night for early human beings and suggested a fear of the dark unknown may have been 'engraved in bygone eras into the convolutions of our brain' (Lorenz 1959:13), but he assumed that the human beings already had access to fire and hunted in bands.

It is not difficult to imagine the horrors of the African nights. Take the zebra, for instance, a much larger animal than the australopithecine. The zebra is a formidable animal, no doubt due to the evolutionary pressures exerted on it by the predators. But at night, it cannot see to defend itself against lions or hyaena. Every night is fraught with deadly danger.

Clearly, for a zebra, having the ability to imagine the approaching night would be so stressful as to compromise its own survival. The ability to imagine would be selected against. What must those nights long ago have been like for the australopithecine, our diminutive ancestors, involuntarily included in an evolutionary process which involved developing a brain capable of imagination? How desperate must have been the race to organize protective strategies, or perish! In the dark, weapons would have been of little value. What was likely to be of much more importance for survival

was capacity for rational thought, perhaps resulting in a device as simple as log across the mouth of a cave, which then could be defended better by hominids with rudimentary weapons. Such simple technology would leave little trace in the archaeological record, imperfect as it is.

As Brain discovered, in the cave he investigated so thoroughly:

> the evolving men mastered a threat to their security that had been posed by the cave cats over countless generations. During Member 4 times the cats apparently controlled the Sterkfontein cave, dragging their australopithecine victims into its dark recesses. By Member 5 days, however, the new men not only had evicted the predators, but had taken up residence in the very chamber where their ancestors had been eaten.
>
> How the people managed this is not recorded, but it could surely have been achieved only through increasing intelligence reflected in developing technology (Brain 1981:273).

Brain was tempted to suggest that the mastery of fire was the technological breakthrough that transformed the lives of 'the new men'. At the time he noted no valid evidence that the australopithecine used fire (1981:55) but later, he and Sillen reported evidence of fire in the caves one million years ago (Brain and Sillen 1988:464–66, cited in Slurink 1993:270). Brain has provided a description of hominid life which justifies the conclusion that our ancestors had much to be paranoid about: they often ended their tentative terrestrial existence as bones in the lairs of predators. A proposition will be put shortly as to how this paranoia may have been passed down the generations.

The above rather dramatic description has been given to reinforce the idea of selection pressures at work to produce a sense of otherness.

Certainly, more benign forms of pressure may also be described. For example, Serpell (1986:137–75) considered that the sense of otherness had survival value for early societies since traditions which humbly attributed a soul and an independent meaning to animals were perhaps less likely to permit over–exploitation of the environment. Such sentiments are unlikely to have applied in the time of the australopithecine, however.

Memes and genes

A fear of the other has been argued as having survival value from before *Homo* achieved ecological dominance and through to the present. If there is some mechanism by which the fear could be inherited, then such would be the case, according to the theory of natural selection. Only if there was survival value in not fearing the other would the fear disappear.

Many instincts can be explained as survival traits and so subject to natural selection, but how these might be inherited remains a mystery. One idea which fits with the naturalistic perspective developed here is the meme, proposed by Richard Dawkins (1989) in his book *The Selfish Gene*, first published in 1976. For Dawkins, the individual is 'a survival machine built by a short-lived confederation of long-lived genes' (1989:44). He argued that a meme is analogous to a gene but replicates cultural traits such as, for

example, the idea of God[16]. Within his general theory that the survival of the individual organism is incidental to the survival of replicators such as genes or groups of genes, he argued that 'a cultural trait may have evolved in the way that it has, *simply because it is advantageous to itself* ' (Dawkins 1989:200, his emphasis).

The wolf provides an example of what is meant here. David Mech (1970) is an authority on wolf behaviour. After observing wolves in the wild and in captivity he commented:

> ...it appears that the wolf does not have an inborn tendency to kill. Rather, it is born with certain behaviour patterns that *allow it to learn to kill.* No doubt both the imitation of the killing behaviour of adults and the association of killing with eating are important steps in the learning process. (Mech 1970:138).

It is not essential, however, for killing to be demonstrated to young wolves by adults. Mech noted that inherited behaviour patterns are so well developed that wolves can learn by themselves to kill prey animals (1970:138).

The sense of otherness may similarly be viewed as genetic potential that is readily expressed in public policy. In Chapter 3 it will be suggested that there is a similarly observable potential for human beings and dogs to associate together.

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[16] Erich Isaac (1969:149–58) analysed a wide range of anthropological evidence and concluded that all human groups experience an extremely impressive sense of 'other' in a religious experience usually referred to as 'God'. The importance for group survival of this shared sense can be seen in a theological view that '..."God" names the principle that ethical requirements are creatively powerful...' (Leslie 1978:71–9).

Dawkins' argument for memes has apparently attracted attention, in that the word itself is being considered for inclusion in the Oxford English Dictionaries (Dawkins 1989:322). The well-known philosopher Mary Midgley was unrelentingly hostile to Dawkins as an 'uncritical philosophic egoist'[17] for what she perceived as his tendency to biological reductionism (1979:439), but she was nonetheless attracted to his original idea of memes. She liked the idea that 'cultural evolution is a process on its own, taking place in units called memes (short for mimemes)' (Midgley 1979:456). However, for this writer, Dawkins' idea of memes seems unnecessarily convoluted and circular. A simpler explanation is proposed by Delius (1989:26–79) who added to Dawkins' theory by suggesting that memes are genetically coded information which is passed on in the physical form of neural substrates in the brain with the capacity for imitation learning. That is, the potential to learn can be inherited.

It may seem immaterial to the argument of this thesis whether fear of the other is inherited or learned. After all, the survival value would be the same. On the one hand, the apparent lack of fear shown by infants towards dogs and other animals suggests that fear needs to be learned or taught. On the other hand, this chapter endeavours to establish a biological dimension of public policy: in that sense it can be argued that the process of learning may be facilitated by genetic potentiators. We are born ready to learn from

[17] In his reply to Midgley, Dawkins suggested she take a few deep breaths and then read his book again (1981:556–73).

others. Learning spoken language is an example which is discussed below.

The apparent heritability of the ability to use grammar is intriguing, and suggests that a naturalistic perspective has explanatory validity. Steven Pinker (1994) considers spoken language to be a heritable instinct, with patterns of neurons perhaps acting as processors in a linguistic anatomy common to all people: 'though we know few details of how the language instinct evolved, there is no reason to doubt that the principal explanation is the same as for any other complex instinct or organ, Darwin's theory of natural selection' (Pinker 1994:333). The possibility that Proto–Indo–European language is the ancestor of a huge range of modern languages is 'mind–boggling. Some ancient tribe must have taken over most of Europe, Turkey, Iran, Afghanistan, Pakistan, northern India, western Russia, and parts of China' (Pinker 1994:252). Like Delius, Pinker guessed that there are patterns of neurons in the brain which, as they are switched on at certain ages, would lead a child to innately 'expect' suffixes and so on (Pinker 1994:302). The evolution of spoken language is related to the capacity of the organs of speech to combine to make gestures that result in words (Pinker 1994:165–70). This subject will be enlarged on in Chapter 3 when it will be suggested that an evolving association with the evolving dog in human home bases helped to allow anatomical processes to evolve which refined vocal communication, when the trade–offs necessary (say the reduction of a large muzzle which perhaps aided olfaction in Neanderthal) would otherwise have compromised the survival of evolving *Homo*.

In other words, a naturalistic perspective explains that fear of the other may have been inherited as patterns of nerve cells in the brains of successive generations of human beings. The fear may have led to drawing a separation from other animals and human groups, and, in a climate of modern certainty, eventually to present day policies which ignored the subjective nature of the animal concerned, ignored the animal nature of human beings, and ignored the question of co–evolution and common needs.

A novel ecological niche

It is possible that *Homo habilis* was responsible for construction of a rough circle of loosely piled stones for shelter in the Lower Pleistocene (Tobias 1965:22–33). Perhaps, as Alan Cromer (1993:47–53) speculated, development of large brains led to the formation of larger defensive groups by *Homo habilis*, which was mainly a fruit eater, and, later, to application of social controls by *H. erectus*, which became a hunter–gatherer. Over the next million years, *Homo erectus* migrated out of Africa, travelling as far as what is now China, and perhaps were the ancestors of the Neanderthal in Europe (Cromer 1993:54). The Neanderthal culture disappeared from Europe within 5,000 years of the arrival there of *Homo sapiens* about 40,000 years ago. Colin Groves (1994:29) noted that the earliest *H. sapiens* were larger and more robust, and had larger cranial capacities than later human beings.

The origin of *Homo sapiens* has been the subject of continuing debate, particularly as advanced investigative techniques have been developed. For example, Diane Waddle (1994) reported an analysis of measurements of fossil craniums which, allied to the fact that fossils found to date in Africa and the Levant were 50–60,000 years older than from elsewhere, supported the conclusion of a single origin for modern human beings. While the site of origin is not clear, she suggested Africa and/or the Levant as most likely. Thus, according to Waddle, anatomically modern *Homo sapiens* evolved some 100–200,000 years ago and replaced archaic human groups in Europe and Asia.

Analysis of the genes of animals, including human beings can, by tracing back to the greatest level of diversity, indicate their origins. Christopher Stringer and Robin McKie (1996:112–42) review the use of mitochondrial deoxyribonucleic acid (mDNA) to assess the origins of human beings. The technique is powerful because the mDNA is passed on through the mother to daughters only, thus simplifying analysis. As Stringer and McKie explain, the publication of results in 1987 by Rebecca Cann, Mark Stoneking and Allan Wilson (Cann et al.1987:31–6) which showed that *Homo sapiens* probably arose quite recently (probably around 200,000 years ago) in Africa from a single maternal origin, sparked a major controversy. Although the popular press leapt on the findings as evidence of an African Eve, the collection of the samples and extrapolation of the results was shown to be flawed. However, since that time, as Stringer and McKie (1996) report, considerable attention has been given to refining the analysis

of genetic material and results tend to substantiate the findings of Cann et al. (1987:31–6). On the basis of latest results Stringer and McKie (1996) argue that the most parsimonious explanation for the origin of *H. sapiens* is that *H. sapiens* did arise from a small group in Africa perhaps as recently as 140,000 years or so ago and probably began their emigration from Africa about 90,000 years ago.

But the matter is highly controversial. As mentioned earlier in this chapter, the Darwinian notion of evolution is one of gradual change, and is commensurate with evolution of modern human beings over a million years within separate regions. Wolpoff et al. (1994:175–99) argue the case for multiregional evolution of human groups over a long period, though agreeing that the source of all human beings is likely to be Africa. They see genetic migration being generally more likely to explain how human populations in various regions both maintained similarities and developed differences in type. Along with the flow of genes went the flow of cultural innovations. Their argument is based on the evidence of the fossil record and persistence of such archaic characteristics in modern human beings. The argument they develop is persuasive because the process they describe can be seen to be happening in the contemporary 'globalising' world.

However, the multi–regional hypothesis appears not to be in step with current consensus based on new finds and techniques. For example, in the same volume, Stringer (1994:149–72) and Howell (1994:253–307), after reviewing the debate, concluded in favour of what Slurink (1993) termed

the 'final sprint' in the evolution of human beings. As mentioned above, the debate continues energetically (see, for example, Stringer and McKie 1996).

As *Homo* became the hunters instead of the hunted, they would have evolved social systems similar to other predators, though, of course, with important differences. If *Homo* had sufficient intellect to erect physical barriers between themselves and other predators to preserve their genes for the present, then they and their successors could have been sufficiently imaginative to erect metaphysical barriers against con specifics and other animals also, while evolving cooperative arrangements with amenable social predators such as the dog.

As Walens wrote:

> Human beings define themselves and their place in the world by integrating themselves with, or opposing themselves to, the other inhabitants of the universe ... Animal symbols are often used to express the fundamental ideas of self and otherness that lie at the basis of moral and religious thought ... A dynamic tension exists within the paradox of the animal as controllable, helpless, subordinate to human needs and that of the animal that is outside the domain of society, tied into forces that control, dominate and domesticate humans (Walens 1987:291–2).

The discussion above is based on ample evidence that human beings evolved through observable stages, even though the details of those stages may be debatable because of fragmented evidence. Within the theory of natural selection it is illogical to visualize this process occurring as though in a vacuum, independent of any other animal species. Indeed, the basic argument of this thesis is that dog ancestors crept under the pale of otherness and, with human beings, began to evolve within a complex.

Evolution of human groupings

Homo species with large brains were naturally selected for survival, but perhaps in a way unique among species. Richard Alexander (1990) reviewed theories of evolution of human groups using a naturalistic perspective, though stressing that legitimate theories based on human biology allowed for choice to over ride biological determinism. Alexander considered that the key to human evolution lay in escalating 'balance–of–power races between human groups' (Alexander 1990:33):

> humans had in some unique fashion become so ecologically dominant that they in effect became their own principal hostile force of nature, explicitly in regard to evolutionary changes in the human psyche and social behaviour (Alexander 1990:4).

His model of human evolution is thus based on the hypothesis that ecological dominance by hominids resulted in increased intraspecific conflict. Larger, more disciplined groups tended to survive. The cohesiveness necessary for the survival of large groups resulted in the evolution of morality and high intellectual abilities. Alexander introduced the concept of co–operation within groups in order to compete against other human groups. Petr Kropotkin (1939:30, 59) had used a naturalistic perspective on co–operation within groups, to construct an argument in favour of political anarchy. He considered that mutual aid and individual initiative were more important than mutual struggle in animal evolution, and gave many examples of 'sociability proper' in animal societies, including cooperation between different species. However Alexander's (1990) linking

of cooperation with competition is in step with the accepted mechanism of natural selection.

Nonetheless, Alexander's (1990) concept can be seen as a sort of counter–revolution within the general idea of the struggle for existence. In the context of this thesis, the struggle (which is the powerful language of many intellectual disciplines such as economics, politics and religion) to survive in a hostile world, reflected in the discourse of control, can be subverted by the advantages of co–operation between species, such as the human being and the dog. In Chapter 3, this idea is extended to co–evolution and inter–dependency between human and canid species, using the naturalistic perspective of Richard Dawkins' theory of the extended phenotype (in simple terms, the phenotype is the outward expression of the genes of an organism).

Alexander's model is deficient, according to Slurink (1993:265–73), because early hominids, the australopithecine, were not ecologically dominant (as already mentioned by Brain (1981), and because several species of hominids coexisted, including *Homo*. Although there is some evidence that *Homo* was less vulnerable than hominids, Slurink (1993:265–73) considered ecological dominance occurred only with the advent of *Homo sapiens*. Predators such as large cats also achieved ecological dominance and even showed signs of intergroup conflict, but 'we see no signs of runaway selection on brain size in these species' (Slurink 1993:268). Similarly, runaway selection on brain size is not observed in

savanna dwelling primates where intergroup conflict is characteristic. To a degree Slurink's (1993:265–73) argument is artificial, since large–brained *Homo erectus* had spread widely, well before the evolution of *Homo sapiens.*

Slurink (1993:265–73) considered a variety of factors which might have forced our ancestors onto a different evolutionary path from other savanna dwelling primates. For the sake of brevity, it may be said simply that he gave most credence to evidence that *Homo* began to increase its meat consumption and so gained some advantage as the savanna became more arid. Hunting and eating meat, in turn, led to division of labour and the need for a home base. He suggests that because home bases may have been in short supply, they would have become the focus for intraspecific conflict. In Slurink's (1993:265–73) adaptation of Alexander's (1990) model, the key factor which permitted ecological dominance was the discovery of fire. Selection pressure for 'extreme creativity' was the engine of change (Slurink 1993:270).

While Alexander's (1990) model might be seen as favouring evolution at a walking pace, Slurink's (1993:265–73) idea is more in keeping with the 'sprint' of *Homo sapiens* from biological constraints, perhaps through cultural adaptations. Whatever the rate of evolution at a given time in a species' history, it is a continuous process. Human organization could not have been achieved without complex speech, which

in turn could not have been achieved in a hostile world, it will be argued, unless human beings were able to share the labour of sensory perception.

The primary need for survival of these early groups lay in cohesiveness which, in turn, depended upon observing group rules. This behaviour would lend itself to institutionalizing traditions which later would result in written rules and refined public policies. It is also suggested that the human home base which had become infested with the ancestors of the dog might be advantaged because of the animal's sensory capacity, which most likely was highly advanced.

The following section links evolution of people with evolution of their policies, using a naturalistic perspective.

Section two: the seeds of the discourse of control

Evolution of a discourse of control

Those *Homo* which defended and operated home bases well, survived and multiplied. While spoken language probably was the original mechanism of organization, discovery of written language would have accelerated the process. The sense of otherness may be observed surviving in the written prescription of behaviour in the struggle for survival. An example of a 'home base operation manual' can be found in the Books of Moses in, for

instance, the history of the revealing of the Ten Commandments to the Israelites summarized in Deuteronomy[18].

The message of Deuteronomy was that, provided the Israelites followed the rules set by the commandments and the statutes and judgments pertaining, they would prevail and destroy their immediate neighbours, and subdue others. If they did not, they would perish. Moses directed that the rules be taught and published widely within the community. Penalties for not observing the rules were extreme — death by stoning, hands cut off or being comprehensively cursed through several generations. The reward, however, was access to the rich lands of other tribes. The language suggests natural selection and the struggle for existence, whereby survivors are defined by extinction:

> 2:34 And we took all his cities at that time, and utterly destroyed the men, and the women, and the little ones, of every city we left none to remain.
>
> 8:1 All the commandments which I command thee this day shall ye observe to do, that ye may live, and multiply, and go in and possess the land which the LORD sware unto your fathers.

The parallels between Moses' directions and the models of early human groupings put forward by Alexander and Slurink are obvious, as is the language indicative of Darwin's 'struggle for existence'.

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[18] It was Deuteronomy which was cited to legitimate the establishment of the Society for the Prevention of Cruelty to Animals (SPCA) in South Australia in 1875 (Budd 1988:20). In Australia and many other countries SPCAs have been active in policing norms in relation to the treatment of animals.

Dominion over animals

The concept that human beings are separate from animals remains at the heart of the discourse of control in western thought[19] and therefore this thesis traces the development of that thought. It is shown that dominion over animals was granted by God to human beings and incorporated in the traditional world view and, when the traditions were challenged by the modern scientific view, dominion over animals was restated. It is in the postmodern view that modern certainty is being challenged, and this thesis is a part of that challenge.

The International Social Science Survey is sponsored by the Australian National University and Melbourne University. The Survey is part of the International Social Science Survey Program which surveys more than 20 countries. In 1994 a postal survey of 1,275 people throughout Australia was conducted to determine public views on evolution. The results of the survey were published in *The Canberra Times* (15 May 1995:2). The manager of the survey, Jonathan Kelley, is quoted as saying that 'the opposition between Christian belief and acceptance of evolution remains

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[19] Steve Jones (1994:118) wrote that four in ten people in the United States believe human beings are not related to apes and that the human species is only a few thousand years old. In Australia the senior animal welfare organisation, RSPCA Australia, has the creationist theme: '... all creatures great and small (... /The Lord God made them all).' and an ethic of stewardship of animals (Wirth 1992, unpublished). In Australia, reportedly only 17 per cent of Australians responding in the International Social Science Survey (*The Canberra Times* 15 May 1995:2) considered that human beings were definitely evolved from other animals. Bowd and Bowd (1989:20–4) studied attitudes of Christian groups in Australia to animals and found a wide range of median attitude scores across the various religions, though there was overlap in scores between religions.

intense in the public mind'. Thirty one per cent of those surveyed considered that it was either definitely or probably false that human beings developed from earlier species of animals, though only 8 per cent thought it was definitely or probably false that modern animals and plants evolved over millions of years.

How this way of thinking may have come about is discussed briefly, using as pointers the work of a few selected critics of the construction of a notion of a human–animal/nature dichotomy within western thought. It is not the aim of this thesis to argue for the rights of urban dogs even though many of the critics selected have been active in the continuing debate on animal rights. A naturalistic perspective shows that public policy is a survival technique of our own species, and so is understandably anthropocentric in orientation. On the other hand, even from an anthropocentric viewpoint, it makes sense to recognize the animal natures of human beings and dogs, when making policy about urban dogs.

A thumb–nail sketch of the writers selected is given below before beginning a general discussion. For further reading, it may be noted that Magel (1989) has provided a useful detailed guide to basically English language information sources on the debate on animal rights.

Mary Midgley considered human beings are animals and argued that human culture included a pre–human root of habit and symbolism which was the natural framework that made rational choice and freedom possible

(Midgley 1978a:317). She was concerned to show that human beings could be distinguished as animals which are motivated by moral considerations.

The anthropologist Barbara Noske reviewed the subject of human–nature relationships and was concerned about those mechanical views of nature, among which she included those of Darwin[20], which pushed into the margins 'all non-physical forces from the picture of nature' (Noske 1989:62) and which encouraged human beings to try to separate themselves from animals. She concluded: 'Otherness can never be an excuse for objectification and degradation either in practice or in theory' (Noske 1989:170). Noske's comment 'as yet there exists in our thinking little room for the notion of a non-human Subject and what this would imply' (Noske 1989:157) is being argued as highly relevant in this thesis because it identifies a major weakness of the discourse of control of urban dogs as merely objects.

James Serpell (1986) analyzed the relationship between human beings and domestic animals, especially companion animals, as a means to understanding the human–nature relationship, and concluded that exploitation of animals degraded the human moral condition. However, pet keeping, by maintaining a link between human and animal societies, may allow positive solutions to be developed to correct this situation. His comment that 'pet-owners do not value their animals primarily as objects,

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[20] The unpublished conjecture by Darwin that 'we may be all melted together' (Degler 1991:7) suggests that his private view, at least, was less fixed than Noske has suggested.

but rather as subjects' (Serpell 1986:86) is relevant to the often poor implementation of the discourse of control of urban dogs, as will be discussed later.

Richard Ryder took a moral stance against speciesism, arguing that 'whatever is wrong in the human case is probably wrong in the non human case as well' (Ryder 1989:8) and he concluded by calling for laws to respect the rights of animals (Ryder 1989:332). This thesis develops an argument that reactive policies about urban dogs similarly react against the animal natures of human beings.

The Oxford historian Keith Thomas (1983) did not take a stance on animal rights but his work is an important reference in the discussion in this chapter. He provided a survey of changing attitudes to nature in general in England during the period 1500–1800. He paid considerable attention to domestic animals, especially the dog. Attitudes to animals in early colonial Australia probably were similar to those he described, given the connections with Britain from 1788.

Harriet Ritvo (1987) used an historical review of animal keeping during the Victorian period in England. According to Ritvo (1987), imperial expansion resulted in the exploitation of animals as economic commodities, but this effect was balanced by an increasing sense of stewardship for animals and appreciation of nature in general. However, Victorian certainty generally reinforced the view of human dominion over nature.

An evolution of western attitudes

Using the work of the above writers as a guide, the following landmark philosophers can be identified for discussion: Aristotle and writers in Genesis, through Aquinas and on to Bacon and Descartes, to end with Darwin.

It was the vitalist school of Aristotle, in which non human animals could be regarded as objects because they lacked souls, which began to institutionalize anthropocentric attitudes (Ryder 1989:21). The world was seen as an intellectual hierarchy with humankind at the peak of a coherent, natural and benevolent system. Even though Aristotle accepted the broad similarity between animals and human beings, and considered that animals had souls, Xenophon and others who popularized his philosophy taught that nature was for the benefit of mankind. Ryder argued that the 'crude anthropocentricity' (1989:22) of Xenophon thus could not be separated from Aristotelian thought. Xenophon was interested in the breeding of dogs and had a highly instrumental view of them — for example, he respected the 'castor–dogs' for their hunting ability but referred contemptuously to 'fox dogs' which he considered to be worthless (Fiennes and Fiennes 1968:8). Certainly, to this reader of Aristotle's history of animals (translated by Balme 1991), Aristotle can be understood as trying to 'capture' animals between the covers of a series of books. Writers such as Lewinsohn (1954:187) claimed that Aristotle believed animals to be unable to think in

the abstract. However, this may not be the case because, for example, Aristotle wrote:

> around the Matois lake too they say the wolves are habituated to the men who bring in the catch of fishes, and when they do not give them a share they destroy their nets as they are drying on the ground (Balme 1991:309).

The inference is that wolves can be revengeful and spiteful, and so, self–aware. Aristotle (as translated) also clearly considered human beings to be animals as, for example, when he compared the volume of ejaculate produced by man and 'the other animals' (Balme 1991:431).

In contrast to the Greeks, who emphasized nature's benevolence, the Judaeo–Christian philosophy stressed the need to control nature (Noske 1989:47) based on God's contract with humankind. The legitimization of a one sided human–animal relationship in Genesis has been mentioned already but is worth repeating:

> 1:26 And God said, let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.
>
> 1:27 So God created man in his own image, in the image of God created he him; male and female created he them.
>
> 1:28 And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.
>
> 1:29 And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in which is the fruit of a tree yielding seed; to you it shall be for meat.

And, after the Flood, dominion was restated by God to Noah and his sons:

> 9:2 And the fear of you and the dread of you shall be upon every beast of the earth, and upon every fowl of the air, upon all that moveth upon the earth, and upon all the fishes of the sea; unto your hands are they delivered.
>
> 9:3 Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things.

Serpell (1986:123) and Noske (1989:46) argued that the way God's word was subsequently interpreted sharpened the dividing line between the human and non human. This division was institutionalized in later Christian thought through the studies and teachings of Saint Thomas Aquinas (1225 – 1274) who was the Roman Catholic Church's 'very own' philosopher (Weisheipl 1987:484). According to Weisheipl (1987:484), in *Principles of Nature*, Aquinas:

> unequivocally defended (1) a real distinction between essence and existence (esse) in all creatures, (2) the pure potentiality of primary matter, (3) absence of matter in spiritual substance (substantia separata), (4) participation of all created reality, material and immaterial, in God's being (esse), and (5) the Aristotelian dependence of abstracted universals on individually existing material things (Weisheipl 1987:485–6).

For Aquinas, 'the human soul has functions, namely, understanding and free choice, that transcend the limitations of animal nature, thereby proving the soul to be immaterial, created, and immortal' (Weisheipl 1987:488). Also, because Aquinas 'sanctioned' the Aristotelian physics and astronomy which placed Earth at the center of a finite universe, his philosophy restated dominion over all life forms (Serpell 1986:123). This, among other things, had the effect of separating human beings from other animals in the policy of the church, even though Aquinas' teachings did include the Aristotelian

natural philosophy that 'the aim of natural science is to understand all natural things through their material, efficient, formal, and final causes' in the search for first principles (Weisheipl 1987:487)[21].

Aquinas' writing coincided with the Inquisition (which certainly was an extreme example of otherness) which during the 13th century began with 'murderous brutality' to reinforce the distinction between human beings and animals, and between culture and nature (Serpell 1986:125). Many of Aquinas' (or related) propositions were condemned in Paris and Oxford under the Inquisition. It was not until his canonization in 1323 and the lifting of the Paris Condemnation in 1325 that his views could be taught and developed freely. Even so, except for the defense of Thomism by the Dominican John Capreolus (1380-1444), 'it was not until the sixteenth century that Thomists began to develop his seminal principles in a notable way' (Weisheipl 1987:489). The Inquisition focussed closely on 'unnatural' familiarity with animals (Ryder 1989:310). Malise Ruthven wrote that the Papal bull of 5 December 1484 issued by Pope Innocent VIII 'is one of the most terrible documents in European history' (1978:119) as it confirmed witch hunting as official policy. The Inquisition's manuals on detecting diabolism, including detecting animal familiars, helped fuel the 'witch craze'

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[21] The influential philosopher Immanuel Kant (1724–1804), according to the animal rights philosopher James Rachels (1991:89–90, 184), restated Aquinas' proposition that it is rationality which separates human beings from animals. Kant considered animals as the means to human ends and as objects of human self-interest. Rachels regarded Aquinas, Descartes and Kant as radical speciesists, and another writer on animal rights, Ted Benton (1993:8), regarded them and Aristotle as the 'real heavyweights' who determined that human beings do not have moral duties towards animals. Midgley stated that Kant's philosophy has no room 'for the possibility that feeling may educate thought' (1978a:160).

of 1450 to 1700 (Finucane 1987:251–54). In England, according to Marshburn (1972:32–60), many unfortunate people, especially women, were accused of being witches during the period 1550–1640 and were executed cruelly. They were accused, among other things, of having as familiars dogs which plagued their neighbours. The idea of 'the nocturnal assembly ... where the witches adored their master, the devil' (Ruthven 1978:124) became widespread. Often the devil was cast in the form of a dog or, more frequently, a cat.

It might be mentioned at this stage that other societies referred to in this thesis (Indian, Aboriginal and Papua New Guinean) may attribute metaphysical capabilities to the dog also. For example, the supernatural powers of the dog are mentioned in an Indian context:

> They say that ghosts are visible to the eyes of a dog. Is it true? Do you believe in ghosts?' [said the septuagenarian to the printer Nataraj] (Narayan 1961:67).

And this same quality seems to be important to some Aborigines also, although, since some dogs are unable to detect ghosts, it pays the Aborigines to surround themselves 'with as many dogs as possible in order to achieve a certain degree of security' from the supernatural and from Aborigines who had become superhuman through the use of magic (Kolig 1973–74:123). In Papua New Guinea some people believe that the dog may be able to detect sorcerers who have made themselves invisible to human eyes. The behaviour of the dog indicates the presence of the sorcerer and

this gives the inhabitants of the house or wherever the chance to drive the sorcerer away with shouted threats (Taua Geita pers. comm. 1998).

A break with tradition

Ironically, in England at the time of the witch craze, dogs were everywhere. Municipalities battled to have guard mastiffs locked up or muzzled during the daytime, with little success. The general dog population needed to be 'periodically reduced in times of plague, when municipal authorities endeavoured (not without strenuous resistance by the dog-owners) to have the animals destroyed as a sanitary measure' (Thomas 1983:103–5) although neither dogs nor their fleas played an important part in the transmission of plague.

Thus, the Inquisition's methods for seeking out otherness clearly were applied selectively in England. The English nobility and aristocracy appears to have continued with an 'obsessive interest in dogs and horses' during the same period that poor women were being tortured and killed (Thomas 1983:13, 101–3).

Perhaps in England, as the privileged classes were allowed to keep pets, so pet keeping came to be seen as a privilege. Thomas quotes the proverb: 'he cannot be a gentleman who loveth not a dog': the dogs which

were loved were greyhounds, spaniels and hounds (Thomas 1983:103, 106)[22].

In counter–balance to the conservatism of the Inquisition, this period in England was also one of revolutionary change. During 1500–1800 'there occurred a whole cluster of changes in the way in which men and women, at all social levels, perceived and classified the natural world around them' (Thomas 1983:15). It was common, early in this period, for people and animals to sleep under the same roof, and the animals were so numerous as to constitute an urban nuisance. The animals were often thought of as morally responsible for misdemeanours and were even subjected to trial and capital punishment[23]. People identified with domestic animals and they were seen as commonplace. For example, the first statute of Westminster in 1275

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[22] The log of HMS *Endeavour* on her voyage of discovery records the botanist Joseph Banks' greyhound chasing kangaroos in Australia in 1770 — without success (Marchant 1962:37). By 1836 the English greyhound had become 'highly destructive' to kangaroos and emus near Bathurst, according to Charles Darwin (1901a:435) who was ashore from HMS *Beagle* for a hunt using greyhounds. Darwin noted that the Aborigines sought to borrow farmhouse dogs, which he presumed were to be used for hunting. Actually, they may have been sought for guarding purposes since, as Collins, when he retired after a decade as the first Judge Advocate of the colony, noted in his report to the Privy Council, the Aborigines at Port Jackson:

> ... eagerly besought us to give them puppies of our spaniel and terrier breeds; which we did; and not a family was without one or more of these little watchdogs, which they considered as invaluable guardians during the night (Collins 1798:556).

This suggests an unexpected predilection for the English type of dog, a matter which will be enlarged upon in Chapter 3.

[23] The depth of this attitude is intriguing. Even very highly regarded scientists are prone to it. For example, see the following statement in a Leading Article of the Australian Veterinary Journal: 'Perhaps on closer examination the porcine virus may be found guilty of producing subtle disease' (Studdert 1993:121–2).

ruled that a vessel was not abandoned while the ship's cat or dog remained on board (Thomas 1983:98).

Iohannes Caius, in 1576, attempted to classify all 'Englishe dogges' according to type and function, and attributed to them certain qualities such as faithfulness, slyness and so on. Caius was among the earliest of a line of English writers who dealt with dog breeds and characteristics anthropmorphically. He reported that Henry VII ordered that one or more dogs which attacked a lion be hung. The king was displeased that 'an ill favoured rascal curre should with such violent villainy, assault the valiant Lyon king of beasts' (Caius 1969:26).

Thus the dog had a subjectivity which was, admittedly, not always to its benefit. However, by 1588 English law determined that a dog, 'being a thing that is tame by industry of man' was property (Thomas 1983:112). Perhaps this signaled the effect of Thomas Bacon's philosophy, to be mentioned shortly. Prior to this, the general, but arguable, public mood in England appears to have been that an animal companion could be possessed but not owned[24].

[24] A hundred years later, in 1690, in his efforts to show that divine rights over other people had not been given by God, the British statesman John Locke (1632 – 1704) analysed Genesis: 1:28 and showed that cattle were domestic animals, creeping things were probably reptiles, and beasts were wild animals. Private dominion over 'cattle' was not given to Adam, but to Noah. Thus, under the covenant between God and Noah 'Cattle or such creatures as were or might be tame ... [could] ... be the private possession of particular men' (Locke 1990:18).

By the early 18th century dog keeping by all classes was widespread as the dog gained in popularity, losing much of its Biblical image of dirtiness. Indeed, the British bulldog became an accepted national emblem. When in 1796 a dog tax[25] was eventually introduced, the dog population of England was thought to be almost one million, most being kept for pleasure rather than for practical needs (Thomas 1983:105). Thomas commented:

> The spread of pet-keeping among the urban middle classes in the early modern period is thus a development of genuine social, psychological, and indeed commercial importance.
>
> But it also had intellectual implications ... it created the psychological foundation for the view that some animals at least were entitled to moral consideration (Thomas 1983:119).

Thomas defined a pet animal as one which was allowed into the house (including into church), given an individual personal name and never eaten (Thomas 1983:112–5). Actually, Captain James Cook reported that the gentlemen on board HMS *Endeavour* learned to eat dog in Tahiti. When they were first offered dog, Joseph Banks alone seems to have tried it enthusiastically while the others were reluctant or refused to eat it. But it seems that they did come to equate roasted 'South Sea Dog' to English lamb, probably because, Cook thought, the dogs on the tropical islands led virtually vegetarian lives (Beaglehole 1955:102–3, 122; Beaglehole 1962a:292,343).

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[25] Ritvo (1987:188) argued that, as well as raising revenue, the tax aimed to prevent the rural poor from owning dogs they could use for poaching. According to her, the tax was framed in a discourse of rabies control and social engineering: if a person could not afford the tax, that person was regarded as unable to afford to keep a dog. Registered dogs were a way of identifying responsible owners.

Thomas' discussion of the period 1500–1800 and reference to the important symbolism of pet keeping may be considered in light of Foucault's view (1979:5–21) on European governmentality. Foucault regarded the period as one of transition, from the Machiavellian understanding of government as being chiefly to protect sovereignty, through a transitional period whereby philosophers such as Hobbes tried to link the concept of sovereignty with a model of government based on good family, and then to the emerging model in which the aim of government was the disposition of things and in which state objectives became directed to its general population. In the process, the family husbandry model became subsumed, though the family remained in a privileged instrumental position as provider of statistics on which government was based. With Foucault's view in mind, the municipal attempts in England to control the dogs of the aristocracy for public safety can be seen as an example of the transition from a type of princely government.

The discussion of Foucault's view allows a pause for thought and reflection on the hypothesis of this thesis. Is the orthodox concept in the administration of urban dog management, based on prescriptions for dominion and stewardship over animals, a relic of the transitional 'family' model of government? Does the attitude of 'responsible dog ownership' exemplify the problem of 'how to introduce this meticulous attention of the father towards his family, into the management of the State' (Foucault 1979:10–16), and result only in a system of watchful control over the terms of a Hobbesian social contract? A more naturalistic perspective may lead to

a policy on 'the right disposition of things, arranged so as to lead to a convenient end' as Foucault (1979:11) described Guillame de la Perriere's argument of the European trend in government since the 18th century. In the context of this thesis, the 'convenient end' depends upon recognizing the animal natures of human beings and dogs, and the right disposition of things would be based on a thorough cost benefit analysis of dog keeping.

Moral and theological writings of the period 1500–1700 re-stated the tradition that human beings had a special place in 'Creation' and had dominion over animals.

Traditions were challenged by the revolutionary empiricism of the statesman and philosopher Francis Bacon (1561–1626), though not the concept of human dominion over nature. According to the economic historian W. W. Rostow (1975:28–39), Bacon's perception that science and technology could be linked together was a catalyst for the economic 'take off' of traditional societies in Europe and especially in England[26]. It is interesting that Bacon considered the printing press, gunpowder and the mariner's compass as the pillars of modern life. Metaphorically the printing press churned away ignorance, gunpowder blew away castles and traditional political systems, and the compass led to canals, exploration and the importation of fresh ideas from Asia on the human–animal relationship.

[26] The consequent population expansion is argued by Foucault (1979:5–21) as an important factor forcing a shift from a model of government based on the family to one in which the family becomes an instrument of government, and the state develops a rationality based on allocations of resources within the population at large.

However, tales of the regard in which Jains, Buddhists and Hindus held the lives of animals were received at first with 'baffled contempt' (Thomas 1983:21) and, for example, the natural philosopher Robert Boyle (1627–1691) considered the eastern religious view was 'a discouraging impediment to the empire of man over inferior creatures' (Thomas 1983:22).

As suggested above, Bacon's philosophy was about 'systematically manipulating nature' (Rostow 1975:30), but it was also about using empiricism to challenge traditions. Unlike Aquinas, Bacon was intellectually opposed to Aristotelian philosophy. In his *Novum Organum* he described the philosophy as sophist and flawed since it generalized from a narrow base (Devey 1901:412). In Book II of *Organum*, Bacon criticizes the Aristotelian method for trying to identify the differences between animals, vegetables and minerals instead of searching for similarities:

> Our labour must therefore be directed towards inquiry into and observing resemblances and analogies, both in the whole and its parts, for they unite nature, and lay the foundation of the sciences (Devey 1901:494).

Bacon's natural philosophy is set out as a series of aphorisms, for example:

> III. Knowledge and human power are synonymous ... for nature is only subdued by submission ...
>
> LXXXI. ... But the real and legitimate goal of the sciences, is the endowment of human life with new inventions and riches ... (Devey 1901:383, 387, 416).

Bacon exemplified his method with conclusions drawn from the analysis of natural phenomena. For him, policy could be based on observation. Bacon's philosophy ushered in an instrumental view of nature which is

anthropocentric, exploitative and reductionist. For Noske, Bacon was a chauvinist who associated science with virility and argued that the domination of wild animals was akin to a return to paradise (1989:57–60).

Bacon himself may not have been as pragmatic as Noske suggested. Rees (1984) reported the discovery of a manuscript of Bacon's, *De viis mortis*, which is more speculative and less focussed on human dominion over nature, even though it does describe a ladder of ascent of species according to the 'vital spirits' in each organism. However, it was Bacon's *Novum Organum* which influenced history to date.

René Descartes (1596–1650), author of *A Discourse on Method* , published in 1637, also sought to reduce the complexity of nature. Like Bacon he opposed the Aristotelian method and was most influential in developing a mechanistic view of nature. In his introduction written in 1912 to *A Discourse*, Lindsay (in Descartes 1949:vii - xxiii) explained that Descartes was 'the author and prophet of the concept of mechanism, under the guidance of which modern science has made its greatest achievements' (in Descartes 1949:xi), but Cartesian idealism also had a 'fatal influence on modern theories of knowledge' (Descartes 1949:xix) because Descartes' conclusion was that, as a thinking being, he was independent of any material thing. This view encouraged scientific arrogance.

Descartes enunciated four rules for his method of inquiry, which remain a basis for scientific thinking today:

> The first was never to accept anything for true which I did not clearly know to be such; that is to say, carefully to avoid precipitancy and prejudice, and to comprise nothing more in my judgment than what was presented to my mind so clearly and distinctly as to exclude all ground of doubt.
>
> The second, to divide each of the difficulties under examination into as many parts as possible, and as might be necessary for its adequate solution.
>
> The third, to conduct my thoughts in such order that, by commencing with objects the simplest and easiest to know, I might ascend by little and little, and, as it were, step by step, to the knowledge of the more complex; assigning in thought a certain order even to those objects which in their own nature do not stand in a relation of antecedence and sequence.
>
> And the last, in every case to make enumerations so complete, and reviews so general, that I might be assured that nothing was omitted. (Descartes 1949:15–16).

Descartes' personal situation did not permit him to practise what he preached, however. Political freedom was unknown in Descartes' time and he was not of the stuff of martyrs (Lindsay, in Descartes 1949:ix). Descartes was deeply disturbed when Galileo was condemned for heresy by the Holy Office in 1633 and, in *A Discourse*, Descartes concluded 'The Principles of Philosophy' with the disclaimer that his opinions were subject to the authority of the Church (Descartes 1949:228).

Descartes' method allowed him to theorize that natural organisms are automata; merely mechanisms like clocks (for instance, he visualized nerves as tiny cords or filaments which, being pulled, created sensations in the brain), and thus 'all the knowledge man can have of nature must of necessity be drawn from (the principles of geometry and mechanics)' (Descartes 1949:225). His concept of pain was that the breaking of nerve filaments unsettled the soul, which was seated in the brain. This caused the sensation

of pain. Since animals had no soul, they could not feel pain (Descartes 1972:37).

Descartes (1949:114–5) did give thought to whether human beings occupied a place among others of God's creatures: 'a part to the great whole of his creatures'. He decided, however, that human beings are special because they can think about thinking ('the faculty of will'). He concluded 'it is chiefly my will which leads me to discern that I bear a certain image and similitude of Deity' (Descartes 1949:114–5).

Even among Descartes close associates, a reaction against his philosophy soon began to be felt. Some of Descartes' disciples soon began to doubt his mechanistic view of nature. His niece Catherine wrote: 'With all due respect to my uncle, it [a garden warbler] has judgment' (Harth 1992:98). Catherine was in the social circle of Madeleine de Scudery who was 'one of the most celebrated salonnieres and women writers of the time' (Harth 1992:44). Salons were important places for discourse in Paris. Many in the de Scudery circle distrusted the Cartesian view that animals were mechanisms. Madeleine wrote of the grief of a male chameleon when its female companion died. The philosopher Spinoza was a pupil of Descartes, but judged animals to have both feelings and a soul (Lewinsohn 1954:186) even though, according to Midgley (1978:46), he saw them as existing for the use of human beings.

The Cartesian view of animals as automata had proponents in England and was the central preoccupation of 18th century intellectuals in

Europe (Thomas 1983:35). However, several men who otherwise were firm Cartesians did not subscribe to the concept of animals as mechanisms (Thomas 1983:98, 106). For example, the philosopher Henry More[27] (1614-87) considered Cartesian disregard for animals was murderously arrogant, and Descartes' reply to him in 1649 is not surprising: 'My opinion is not so much cruel to animals as indulgent to men ... Since it absolves them from the suspicion of crime when they eat or kill animals' (Ryder 1989:23, 57). One might think Descartes a paradox — a pragmatic idealist — and note that his dilemma is shared by public decision makers of today.

The Cartesian view coincided with the diffusion through Europe of a 'process of preindustrial modernization' (Rostow 1975:39) and, among other things, allowed animals to be exploited with a clear conscience, the convenience of which Descartes was well aware. The acceptance of human domination of animals was a pre-condition for the explosion of European society economically and agriculturally: anthropocentricity was thus a survival technique for Europeans (Serpell 1986:137) taking off into a capitalist future.

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[27] Henry More himself believed that cattle, sheep and vegetables had been given life in order to keep their flesh fresh for human consumption (Thomas 1983:20). This view remains extant in western society — 'The earth was made with loving care so that we could enjoy life fully' is quoted from a pamphlet distributed door–to–door in Canberra in 1994 (Watch Tower 1992:5).

Even where Descartes' extreme view of animals as automata was not accepted nor acceptable:

> Descartes's influence has been so broad and so pervasive that philosophers in the West can all be said to be Cartesians, just as they are all Greeks, in the sense that, even when they are utterly opposed to Cartesianism, the stances they assume are responses to issues originally posed by Descartes (Beck and Watson 1987:594).

For examples of the influence of modernization on thought, the review by Robert Brown (1984) of the search for social laws was consulted. Brown chose the period beginning with the life of Machiavelli (1469–1527) and ending with that of John Stuart Mill (1806–1873) as particularly significant to the search. Advances in natural sciences since the time of Galileo encouraged an idea that God's plan was rational and explicable, if only the secret key to understanding could be discovered (Brown 1984:12).

Early mercantilists searched for a similar natural law of monetary exchange which would make government intervention unnecessary (Brown 1984:46). The political theorist Thomas Hobbes (1588–1679) decided that the natural law for society could be reduced essentially to '*Do not that to another, which thou wouldest not have done to thyself*'[28] (Brown 1984:52). Brown (1984:52) considered that Hobbes was not stating a natural law[29], but merely making a statement on an idealized prepolitical situation which did

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[28] The italics are Brown's.

[29] Even though Hobbes' moral philosophy did inform the subsequent philosophy of Utilitarianism, it was based on the belief that natural laws were commands from God (West 1989:959–61).

not lead to any testable hypothesis. It might be noted that Hobbes' principle can be seen as a basis of regarding the ownership of a dog as subject to its not being a nuisance to other people, and thus as another reason for ownership being seen as a privilege.

The philosopher and economist Adam Smith (1723–1790) proposed a natural social law which did not require a religious explanation. Smith wrote in *The Wealth of Nations* published in 1776 that each individual, though acting in his or her own interest, 'is led by an invisible hand to promote an end which was no part of his intention' (Brown 1984:69) and this end frequently benefits society. Thus the promotion of each person's self-interest was the basis of a governed and self-perpetuating economic system. At this point, the similarity of this idea to Darwin's 'struggle for existence' might be discerned.

Adam Smith was one among the Enlightenment school of thinkers who challenged the need for divine legislation of natural social laws. Until the 18th century, when this school challenged the Christian assumption of divine intention, it was 'difficult to discuss the features of Society without moralizing' (Brown 1984:11). The Enlightenment meant that nature could be regarded as governed by laws which could be analyzed. David Hume (1711–1776) was a notable philosopher of the Enlightenment. He considered Hobbes' rule to be deficient as a natural law. Hume argued that the fact that human beings interacted, presupposed the existence of a social order. Among other arguments Hume pointed to the fact that similar social

orders existed in widely disparate societies (Brown 1984:83). Although it is a little premature to discuss the matter in detail, it might be said now that the naturalistic perspective advanced in this thesis is more aligned to Hume's view than to Hobbes' (which better fits the notion of responsible pet ownership). Chapter 4 enlarges on the 'invisible paw'.

Hume's idea of 'is/ought' is particularly interesting. Yalden-Thompson (1978:89–93) cited an extract from Section 1, Part i, Book 3 of Hume's *A Treatise of Human Nature.* In the extract, Hume noted the frequency with which reasoning on God or society proceeds imperceptibly from what is or is not, to defining without explanation what ought or ought not to be. Yalden-Thompson's discussion on the significance of this comment is adapted here to highlight one of the problems in urban animal management, namely, the labeling of an 'irresponsible pet owner'. A judgment may be based on facts, but is not therefore a fact in itself. Take, for example, Blackshaw and Day's (1994:113) statement: 'Irresponsible pet ownership has resulted in large numbers of unwanted pets' stated baldly in the *Australian Veterinary Journal.* Hume would comment on such a statement ' 'tis necessary that it shou'd be observ'd and explain'd' (Yalden-Thomson 1978:89), which Blackshaw and Day did not do.

According to Thomas (1983:28), conjecture based on history was encouraged in Europe during the Enlightenment. It is interesting to note that both the French naturalist Buffon (1707–1788) and the English naturalist Thomas Bewick (1753–1828) considered that the taming of the dog was

crucial to the human conquest of the earth. Dogs certainly featured early in the colonization of Australia, as will be discussed in Chapter 3.

The sharp division between human beings and animals increasingly became less tenable intellectually. As early as 1699, a scientist, Edward Tyson, demonstrated the close anatomical relationship between the human being and chimpanzee (Ritvo 1987:31). In 1735 Linnaeus classified humankind as Primates. Several notable writers such as Goldsmith, Cowper, Blake, Burns, Byron, Shelley, Oliver Wendell Holmes and Emerson stressed the kinship between human and non human (Ryder 1989:69-72; Turner 1964) and undermined the separateness of people and animals. In the 19th century the relationship between people and dogs in England was commonly sentimentalized in print. Dog shows began in the year Darwin first published *Origin of Species* and the Kennel Club was established in 1873 to record pedigrees of dogs. By the middle of the 19th century, the British had come to be regarded as a nation of dog–lovers (Thomas 1983:108).

Loving a pet dog is rather different from acknowledging continuity between species though pet ownership may, as Serpell (1986) argued, lead to a more ethical attitude to animals.

Public health issues remain important in the discourse of control of urban dogs. Ritvo (1987) noted that in the period 1750–1900, there was much media attention given to rabies even though the disease itself was relatively uncommon. The result was that any occurrence created a frantic

outcry from the public for action by authorities. Muzzling of dogs in public places was required and the muzzled dog was a symbol of the power of the state — this led to 'tension between self-righteous enforcers and pet owners resentful of official attempts to control their behaviour and that of their animals' (Ritvo 1987:192). Ritvo considered that the rabies discourse was a rhetorical battleground about progress, regarding the disease as a metaphor rather than a real threat to the public health. She argued that rabies was the chance for public health discourse to become established in the public consciousness, with its apparatus of prescription and vaccination. Indeed, Pasteur's vaccine was at first regarded by many, including 'many medical men', with scepticism because of apparent failure and occasional deaths from the vaccine itself , reflected in an editorial in *The Times of India* (1 October 1888)[30]. Another possible reason was the objection by many people that having animal material injected into themselves may lead to their 'animalization' (Thomas 1983:39): perhaps this view reflected a sense of 'otherness' also. Rabies does not occur in Australia, yet the possibility that it may occur one day is cited as 'a forceful argument for urban animal management' (Banks 1992:59–69). Yet in a place such as Jaipur, where rabies is prevalent, public administration of urban animal management is provided with minimal resources.

[30] Reprinted in *The Times of India* 18 December 1993.

Foucault (1979:17) argued that mass vaccination was indicative of change of 'governmentality'[31], of the move to state centered government based on populations, as already discussed, and in his view it would not be necessary to seek the double agenda which Ritvo discussed.

Public safety also is an important component of the discourse of control of urban dogs. Perhaps the state could be forgiven for seizing on any excuse, such as the fear of rabies, to underline the otherness of dogs. In early modern England, household mastiffs were a 'notorious hazard' (Thomas 1983:102) to the public, even though their importance for protecting public property was well recognized. Some of these animals were huge, and often were kept in large numbers. Municipalities struggled to maintain some sort of control for the protection of the public.

A naturalistic perspective recognizes survival value for human society in public health and safety measures, just as it recognizes dog keeping as a need of human nature. This chapter suggests a link between the biological evolution of human groups and of the evolution of their policies. The linkage is more readily discerned in early societies but appears to become increasingly vague in modern western thought. Using a naturalistic perspective, considerable evidence has been provided on the animal nature of human beings but the general impression gained from the search of the literature relevant to western thought is that the connection between human

[31] Ellen C. Paxton brought Foucault's possible play on words to the writer's attention.

beings and other animals has not been confronted despite the theory of natural selection. Indeed there appears to be an increasing tendency to view animals such as the dog in economic terms, as objects to be owned, as pets for human gratification, or otherwise to be exploited or controlled for human ends. Although the chapter set out to explain a biological dimension to public policy making about animals, in effect this dimension has not been recognized except as a dichotomy. Otherness has been argued as a biological dimension which affects policy, but because otherness remains in modern thinking, such thinking has drifted away from even considering complexities of the relationship between human beings and urban animals. Thinking framed within traditional frameworks and by ordinary people was more likely to recognize complexities, even though such thinking too could be corrupted by the attitude to the animal as an other.

Serpell (1986:132) argued that, since the theory of natural selection relied on chance rather than on a divine design, anthropocentric certainty should be weakened, particularly when we were forced to recognize our Primate relations. He hoped that pet keeping would help to reinstate an appreciation of the animal world. In this respect he seems to be wrong, perhaps because he also has an instrumental view of the relationship between human beings and, for example, the dog. The paradox is stated by Ryder (1989:163): scientists studied the physical similarity of animals to human beings, but did not accept their equivalence. Darwin makes a similar point: 'animals whom we have made our slaves, we do not like to consider our equals' (quoted in Rachels 1991:132).

In Victorian England the prospect of being related to animals was unattractive. The functions of society depended upon differentials between classes and between humans and non humans. The idea of having 'animal instincts' was alarming to many of the Victorian middle class. Indeed, Ryder (1989:160–5) argued that, even though many scientists did accept the human/non human continuum, the response was uneven. This was particularly the case in the study of animal behaviour: in the new field of experimental psychology in particular, anthropomorphism was regarded with contempt. The view that animals are living machines tended to cause some scientists to behave as though living creatures could not be both mechanical (in the sense that they followed observable regularities of behaviour which depended upon the physical state of their nervous systems) and also, at the same time, conscious. As Ryder (1989:164) commented: 'The words "anthropomorphism" and "sentimentality", both widely used in twentieth-century Britain to disparage those who treated non human animals in ways considered to be only appropriate to humans, were unheard in this context until after Darwin's day'. In 1927 the influential psychologist Ivan Pavlov turned the clock back to Descartes' time by regarding speculation on the subjective state in animals as 'fantastic' (Ryder 1989:164). The paradox remains: psychologists study non human animals to explore the mind and behaviour of human beings (Dewsbury 1992:3-19). According to Noske (1989:64), Darwin's theory of evolution, though explaining the human–animal continuum, also paved the way for mechanical explanations of nature based on genetics. It may also have institutionalized the view of

competition between human beings, and between human beings and animals.

Extensive reference is made above to the situation in England, chiefly in the period 1500 to 1800. It is from the England of those times that public policies were exported to what was to become Australia. Those public policies are discussed in Section three of the next chapter when the thesis builds a picture of the present situation in public policy on urban dogs, using the Australian Capital Territory as a case study. In that section, the evolution of public policies is followed in some detail.

Natural selection is not discussed further in this chapter, except for the few comments below. Carl Degler's *In Search of Human Nature: the decline and revival of Darwinism in American social thought* (1991) is a useful commentary on the position of the theory of natural selection in the western situation.

The animal rights philosopher James Rachels (1991:79) considered that the impact of Darwin's thought in undermining human dignity barely has been felt. Rachels proposed that the complexity of an animal's biographical life determined its moral individuality. In this sense, the moral worth of an animal could be rated higher than that of, say, an intellectually handicapped or disabled human being. It is difficult to see how his argument fits with a discussion of natural selection, which is based on leaving progeny, since handicaps may have a host of causes. Peter Singer (1991) agreed with Rachels that Darwinism undercuts the belief in human

separateness from animals, and therefore that human beings should not be placed in a special moral category.

Rachels' argument is considered rather sophisticated, as it ignores an important corollary that can be drawn from the theory of natural selection: public policy is primarily anthropocentric since it is a survival technique of the human species. As this chapter has shown, the animal rights movement has stimulated a significant literature on the non human–human continuum which can inform public policy makers in urban dog management. However, as has been stated at the outset, this thesis is not an argument for or against the rights of dogs.

Species do not evolve in vacuums. It is one evolutionary continuum which is the subject of the next chapter — a discussion of co–evolution of human beings and dogs as a complex of animals which cooperated to compete successfully in a hostile world. If this chapter has not forced a recognition that the evolution of human beings within associations of other animals needs to be recognized in public policy, it is hoped that Chapter 3 will do so. There the radical proposition is put that domestication of the dog was not a human–mediated cultural initiative but a biological fact. Thus public policy makers and administrators need to recognize that part of what constitutes a human being is an association with the dog. Perhaps the proposition will be a grain of sand on that 'threshold of a colossal break through in our understanding of ourselves' anticipated by Rowley-Conwy (1993:144–5).

Chapter 3

Co–evolution: a new model for human–canid associations

> Let *Hercules* himself do what he may
> The Cat will mew, a Dog will have his day (Shakespeare 1969:79).

Introduction

The previous chapter argued in fairly general terms that a naturalistic perspective can explain why human beings considered themselves separate from other animals, and how this sense of otherness conditioned main streams of thought. Basically, the chapter suggested that anthropocentricity in public policy could be understood as a strategy for survival in a hostile world. On the other hand, anthropocentricity as a basis for public policy has limitations, as William Shakespeare (above) states neatly. In his book, *Beasts: thumbnail studies in pets*, Wardlaw Kennedy used this quotation from Act 5, scene 1 of Shakespeare's *Hamlet* to indicate the prevalence of dogs and cats in 'every well constituted household' (1899:121–2) in Victorian England. The image of the pet dog remains a symbol of well constituted households in Australia today (the dog being depicted on the Australian fifty cent coin issued in 1994 to commemorate the Year of the Family) and arguably in middle class households in developing countries such as India as well.

To begin a radical reappraisal of the situation in which human beings have considered themselves separate from other animals, this chapter focuses the naturalistic perspective on co–evolution of dogs and people. To locate the reappraisal practically, because the thesis seeks to contribute to urban animal management policy in Australia, the process of developing policy about urban dogs since European colonization of Australia is discussed. The chapter will have achieved its purpose if it establishes:

- the likelihood that the association between human beings and dogs includes an evolved biological dimension, and therefore
- that dogs and people can be usefully considered by public administrators as two animals in the urban environment.

It is Richard Dawkins' (1982) theory of the naturally selected extended phenotype which guides this chapter. His theory is a logical extension of Darwin's theory of natural selection. The biological interdependency between human beings and dogs is discussed as an extended phenotype — called, for dramatic effect, the Urban Sextipede. The argument that is developed in this chapter is that the human–canid relationship is complicated and organized by naturally selective forces. Evidence for the complexities of the relationship which public policy makers need to address is given in Chapter 4.

It must be noted at this stage that what is *not* being argued is that the two species are merely symbiotes or in a mutually beneficial relationship.

What is being argued is inter–dependency. An example may illustrate the point. In a superficial view, bees and flowering plants may be regarded as living symbiotically, but consider the following example reported by Calaway Dodson (1975:89–99). A specific orchid puts out a scent that attracts the males of one species of bee, which collect the components of the fragrance in cavities in their hind legs. The fragrance attracts other males of the species and they form a single specific group, which in turn attracts the female and mating takes place. The fragrance is thus a way of identifying and concentrating a single bee species amongst many bees, and the reproduction of that species is enhanced naturally. Similarly the attraction of the fragrance for this species of bee means that the pollen adhering to the bees is carried to orchids of the same species as the pollen giver. The situation is complex and organized by natural selection. The biologist Richard Dawkins makes the point that it can be argued that it was because of insects that blossoms evolved (1986:63). For him, 'The theory of evolution by cumulative natural selection is the only theory we know of that is in principle *capable* of explaining the existence of organised complexity' (1986:317). This chapter suggests that a defining part of humanness is an association with dogs, a complex natural situation which can be explained using a naturalistic perspective.

The chapter has been divided into three sections. The first section briefly discusses some views on the origin of the dog and on its developing relationship with people. The section introduces what may be termed the orthodox view of domestication whereby an animal is tamed and changed to

suit human ends. The domestication of animals is seen as an indicator of human civilization and progress. The section demonstrates that the former views have inevitably been coloured by trying to locate the dog anthropocentrically, that is, by defining the animal in terms of human culture and civilization, as an instrument of human intention. The dog has been of such demonstrable usefulness to human beings as a work mate or companion that its usefulness has been taken to be a product of its domestication[32]. In other words, human ingenuity created the dog. The latter part of this section begins to address the arrogance implicit in this view by turning the orthodox view on its head and arguing that the usefulness of the dog is an effect of the evolved inter–dependency between two animals, an inter–dependency which has been engraved in their genes by natural selection. The dog *is* useful because in the process of co–evolution certain human faculties became less critical for human survival and could, in a sense, profitably be devolved to the dog, the devolution enabling other human faculties (particularly speech) to evolve into tools for survival and eventually for ecological dominance. This is the critical point that the thesis lays before public policy makers.

Section two speculates how and why human beings and dogs evolved as a cooperative complex (an extended phenotype) competing in a hostile world. Long before human civilization could be used as a reference

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[32] The term 'domestication' is used loosely in many of the publications referred to, and in this thesis also is used loosely to indicate an association between dogs and people in human home bases.

point, the dog evolved within the newly forming ecological niche of human purposefulness. In this niche, human beings were also evolving. The process thus may be termed 'co–evolution'. Both human beings and dogs underwent anatomical changes in the process of co–evolution. These changes can be traced in the physical record and logically were accompanied by behavioural changes, as the two animals became inter–dependent. The section does not argue that the association was deliberate nor welcomed by either party, but it was successful in the evolutionary sense — human beings and dogs are plentiful in most places in the world, Neanderthal and wolves are not. The section is skeptical that the dog ever was domesticated by human beings. The alternative proposition that 'domesticatability' was a trait selected for naturally is developed from the literature and from observation of dogs in relatively uncontrolled urban situations. As human home bases spread, probably from a single region, associated canids and other animals spread with them.

Section three retains a naturalistic perspective but uses the vocabulary of the public policy process. The intention of this section is to suggest that the biology of the human–canid relationship has real meaning in public policy terms, despite the increasing tendency in Australia since the 1850s to deal with the dog as a privately owned object. The section describes the arrival of European home bases in Australia and the original presence of the dog in those bases, to show the elemental nature of the relationship between human beings and dogs, but also to suggest how the

need to regulate dogs in the interests of human survival at the beginning of colonization flowed into present day legislation.

Section one: domestic helper or fellow traveler?

'Man's best friend'

Introduction

In Chapter 2, the Piltdown Hoax was discussed to show the effect of vested intellectual and religious interests on constructing acceptable theory on human origins. Similarly, the concept of human–mediated, purposeful domestication of the dog for various ends has coloured discussions on the dog. Domestication of the dog is seen as a pointer to the emergence of human civilization.

The fossil record of human and canid remains in association is too imperfect[33] to show whether the canids were simply associated by chance, were living in human home bases or were food. Juliet Clutton–Brock of the British Museum has made it clear that the identification of domesticated dogs in the archaeological record is imprecise. She considered that the weight of evidence is that the evolution of the domestic dog occurred quite recently (Dennis-Bryan and Clutton–Brock 1988:8). However, to try to limit

[33]The presence of dogs or other carnivores exacerbates the situation, as pointed out by Davis (1987:24) who noted that the significance of animal behaviour in relation to archaeological findings has been little studied. Dogs or other carnivores may have destroyed bones but they also may have brought bones to the site. Walters (1984) reported how dogs and other scavengers quickly destroyed some 97 per cent of bones at a contemporary Aboriginal site.

the date of initial associations only by reference to the archaeological record is a block to logical speculation, even though it may conform to Descartes' principles mentioned in Chapter 2.

Dexter Perkins (1973:367–90) noted the anthropocentricity of most assessments of faunal remains at archaeological sites. Most faunas are assessed according to whether, and with what relative frequency, the animal was used for human food. He commented that the chances of bone fragments surviving at archaeological sites were extremely small. Tangri and Wyncoll (1989:85–94) similarly commented on the small chance of survival of bone fragments of what they termed commensal animals at sites where human remains had been excavated.

The orthodox view of the domestication of the dog also suffers from an anthropocentric perspective but it is the view that informs many policy makers. The urban dog is somehow an artifact of urban life, a problem rather than a defining factor of urban life. The orthodox view therefore needs to be discussed.

A process by which the dog might have been purposefully domesticated is suggested below, derived chiefly from Zeuner (1963:57-63). It may be noted that this process presupposes initial taming of the canid:

- loose ties between the human and canid societies, with tame canids continuing to breed with wild canids;

- canids kept under comparatively strict conditions such that breeding opportunities with wild canids were limited. Differentiation of the domestic dog from its ancestors would become apparent (and encouraged, so that the dog was easily distinguished from its wild counter-part [Clutton–Brock 1987:22]);

- the third step in the process of domestication is the intentional development of certain economic characteristics. For example, it appears that Mesolithic peoples permitted their dogs to interbreed with wild canids to develop more aggressive breeds of dogs;

- by the fourth stage of domestication, domestic dogs became standardized and so different from their wild ancestors that interbreeding must have been undesirable. The fourth stage can hardly have been clear-cut: Aristotle referred to the then contemporary practice of tying up domestic bitches so that wolves, foxes and tigers might mate with them, noting that many were devoured 'if the wild animal does not happen to be excited for mating' (Aristotle, translated by Balme 1991:205). At the turn of this century, Jack London referred in *White Fang* to a similar practice whereby Alaskan Indians tied bitches out to be mated with wolves (London 1983b:307);

- the final stage in domestication was when the wild ancestor became regarded as an enemy, and as a nuisance with no economic value. This seems to be particularly true of the wolf: those that survive are hunted ruthlessly. Hall and Sharp (1978) report that 500 hunters turned out to seek a single wolf reported near Helsinki. They commented on the darker side of anthropocentricity:

> In our cultural tradition, where nature is intolerable and animals are inferior, the wild wolf becomes not only intolerable and inferior but downright immoral in its refusal to accept the position allocated to it. (Hall and Sharp 1978:xiii).

Paranoia about the wolf could perhaps also be explained by the deep–rooted sense of otherness discussed in Chapter 2. For example, Farley Mowat (1965) who studied and was the neighbour of a family of wolves for some months, discovered to his chagrin when he encountered them unexpectedly:

> Despite my close familiarity with these wolves, whom I had come to know and respect as friends, this was the kind of situation where irrational but deeply ingrained prejudices completely overmaster reason and experience. To be honest, I was so frightened that paralysis gripped me (Mowat 1965:183).

When his fear abated, Mowat (1965:185) was ashamed to discover that, had he had a rifle, he believed he would have 'reacted in brute fury and tried to kill both wolves ... [Angeline and her cub] ... in resentment against the beasts who had engendered naked terror in me and, by so doing, had intolerably affronted my human ego'. The wolves did not respond in the same irrational way despite being similarly stressed. Mowat's description is

entirely in keeping with the suggestion in Chapter 2 of a sense of otherness, directed at potential predators, heritable from our hominid past.

Writers have suggested reasons how the initial taming of wild canids led to the development of an amiable relationship between human and canid societies. Lorenz (1959:7–20), Zeuner (1963:39-56) and Hyams (1972:9) suggested that Neolithic people threw food scraps to wild canids as an elementary expression of solidarity with related life forms. Human ability to communicate and organize, and wasteful hunting methods (driving herds of horses over cliffs, for example) must have been a bonanza for other carnivores (Zeuner 1963:17; Fiennes and Fiennes 1968:3). Of course such behaviour primarily benefited the human hunters. Smith (1977:241-69) provided an additional economic explanation for such seemingly profligate behaviour: it is rational behaviour, he argued, given the common property nature of the animals and the fact that the killing of large animals returned high value to the hunters in return for minimal effort.

Another view is that a strong sense of sharing would have had survival benefits for the early, small groups of hunter-gatherers, and this sense spilled over to include other animals. Clutton–Brock (1987:14–15) suggested that this sense of sharing led to the caring for the young of other species, which may even have been suckled at the breasts of the women, and the caring led to the taming and domestication of, for example, ancestors of dogs.

However, the clearest (though arguable) image of the early association between human beings and dogs is cooperation in the hunt for food. Clutton–Brock (1984:204) has suggested that the domestic dog played a key role in the development of human hunting technology and strategy during the Holocene. This period occurred about 10,000 years ago. The hunting role allocated to the dog is discussed briefly below.

Man–the–hunter and the dog

Discussion of domestic animals is usually focussed on them as food for human beings, as a means of acquiring food for human beings or for harvesting that food (see, for example, Bökönyi 1989:22–7; Ducos 1989:28–30). The underlying consensus which is assumed to exist is that 'there is agreement that domestication is a highly developed man–animal relationship that emerged in a rather late stage of mankind's history' (Bökönyi 1989:23). The debate on the domestication of the dog has the strong premise that the dog was chiefly used for hunting. For example, Clutton–Brock wrote of wolves tamed by hunters in the prehistoric period:

> It may be that in fact there is very little difference and the relationship [between human beings and dogs] is much the same now as it was at the end of the Ice Age. This is because the remarkable kinship and powers of communication that exists between human beings and dogs today have developed as an integral part of the hunting ancestry of ourselves and the wolf. It is a biological link based on social structures and behaviour patterns that are closely similar because they evolved in both species in response to the needs of a hunting team, but which endure today and have become adapted to life in sophisticated, industrial societies (Clutton–Brock 1987:34).

This is a sociological perspective which does not give sufficient weight to the biology of the situation. Mentioned later are papers compiled by Roberta Hall and Henry Sharp (1978) that argue that parallel evolution actually reinforces differences between the two species, rather than tending to merge them. Clutton–Brock herself later emphasized that 'there is a great difference between a tamed wolf and a domestic dog' (Clutton–Brock 1987:37) and the question is begged as to how the transition occurred. Clutton–Brock's (1987) publishers label domesticated dogs as 'man–made' which in the context is impossible.

The dog as fellow traveler

It may be more productive to view the dog from a less anthropocentric viewpoint. It should be remembered that australopithecine and archaic *Homo* apparently survived without the aid of the dog for hunting. Chimpanzees hunt other animals using only ambush strategies and vocalization which is primitive in comparison with human speech (Boesch 1990). Zeuner (1963:36) considered that Mesolithic hunter–gatherers of 5,000–12,000 years ago would have found it more economical to follow in the steps of their food gathering Paleolithic ancestors, than to waste time on taming and domesticating animals. He therefore has disputed whether people intentionally domesticated animals for the sake of exploiting them. It is apparent that human beings successfully hunted large animals such as mammoth without the need for dogs, and it is possible that Australian Aborigines survived as hunters without the use of dogs — since evidence is

lacking that canids were present in Australia before 5,000[34] years ago (Bowdler 1981:531). Even today, where several breeds of domesticated dogs are available to Aboriginal communities in an extensive environment, it is not clear whether the dogs are a help or hindrance to hunting, indeed, whether the dogs are 'Aboriginal man's best foe' (Kolig 1973–74) or 'Aboriginal man's best friend' (Hamilton 1971–72). For other discussion on this subject see, for example, Hayden (1975–76) and White (1971–72).

Charles Darwin (1882: vol.1:15–45) reviewed writers on domestic dogs and discussed at length the debate on whether the dog was derived from one or several species. His comments indicated a general belief that the dog was a composite animal somehow created by human beings:

> As long as man was believed to have existed on this earth only about 6,000 years, this fact of the general diversity of the [dog] breeds at so early a period was an argument of much weight that they had proceeded from several wild sources, for there would not have been sufficient time for their divergence and modification (Darwin 1882: vol.1:18).

Obviously, Darwin did not believe the world was created 6,000 years ago. He did view the dog as somehow created by people, however, for he commented that, since so many 'savages' had dogs, he concluded it was unlikely the dog stemmed from a single source. Thus he seems to assume human intervention as a prerequisite for the existence of the dog, rather than natural selection. Of course, artificial selection can change the appearance of

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[34] At the time human beings first occupied Australia/New Guinea sea levels were much lower than today. Vast coastal plains where archeological remains could be expected, are now flooded.

an organism but that is a different matter to creating an organism. Artificial selection is applied to natural variations and even mutations but its products are still subject to natural selection. This statement is illustrated by a point which Darwin raised but did not pursue, that is, that British breeds of pointers, hounds and greyhounds which were exported to India, 'degenerated' in appearance into the pariah type of dog even though no cross breeding occurred with the pariah. He noted that even bull dogs were susceptible to this effect, their muzzles becoming finer and their body weight less. Spaniels apparently were more resistant. Darwin noted also that the pariah dog in certain districts of India showed a marked resemblance to the Indian wolf (Darwin 1882: vol.1:25, 39). Breeds of dog may thus be seen as being inherently unstable and requiring the constant intervention of dog breeders. A breed of dog is a human construct, not an otherwise naturally occurring animal. This is a fact that is gradually being recognized by public policy makers when they address the issue of dangerous dogs in the urban environment.

The pariah dog will be mentioned often in this chapter, and it is timely to refer to Epstein's definition of the pariah:

> The term pariah is derived from the Tamil 'pariayan'; literally meaning 'drummer', it is applied to members of a low caste in southern India. As applied to domestic dogs, it denotes a group whose individual members are generally distinguished from the majority of other domestic dogs in that they are not attached to human masters, frequently not even to certain households; they are not bred, reared or protected by man, but eke out a miserable existence scavenging on whatever they can pick up in the streets and outskirts of towns and villages (Epstein 1971: vol. 1:28).

While Epstein's definition illustrates the vagueness of the term 'domestic' and can be criticized as value laden (a 'miserable existence', for example being inferred as one outside the pale of human protection), it is useful as a description of an animal which quite probably remains the most numerous type of dog in the world.

An enthusiastic supporter of Charles Darwin, Francis Galton, wrote in 1865 that domestication most likely was a haphazard process, successful only with those wild animals which were hardy, had an in-born liking for people, loved comfort, were useful, bred freely, and were easy to look after. He foresaw that those animals which were not refractory to domestication were 'doomed to be gradually destroyed off the face of the earth as useless consumers of cultivated produce' (Galton 1907:194). Although Galton considered that an animal's survival depended to a large degree on its usefulness to human beings, he also posed the question whether the first human being to domesticate an animal was a 'genius' or whether it was the nature of the animal species to be suited for domestication (Galton 1907:174). The latter proposition fits better with a naturalistic perspective.

Darwin was only one of many who defined the dog through its association with human beings. For example, G.F. Scott Elliott suggested that a canid may have hung around the outskirts of Indian villages and 'may have changed insensibly from the status of a wild jackal to that of a pariah dog' (1915:197). Since a jackal is not a dog and the evidence is that villages have existed for only a few millennia, Scott Elliott is suggesting very rapid

species differentiation which is far more radical than natural selection could permit. This same author noted images of wolves or dogs in rock paintings of great antiquity in the South of Spain (Scott Elliott 1915:178). A. Croxton Smith (1948:21–49) also commented upon these paintings, and noted that the presence of the dogs in the hunting scene showed that the process of domestication had begun much more than 10,000 years ago. He considered that the association probably began with human civilization in Asia.

Early debate on the evolution of the dog appears to have been about whether it developed from the wolf or from the jackal (Kennedy 1899:123). Brian Vesey–Fitzgerald (1957:1–28) provided a thorough review of publications on the natural history of the dog. He discussed opinions that the dog was derived from several species, from the northern or Eurasiatic wolf (*Canis lupus*), that it was derived from the jackal, and that some dogs were derived from the northern wolf while others were derived from the jackal. The northern wolf fitted the role allocated to it, apparently because the remains of dogs first found had been in Neolithic human dwellings excavated in northwest Europe.

The role of the jackal in the origin of the dog was popularized by Konrad Lorenz in his widely sold books on animal behaviour: *King Solomon's Ring* first published in 1952 and *Man Meets Dog* , first published in 1954. Lorenz (1959:7–20) saw humankind drawing reassurance from the nearby presence of scavenging jackals in the dark and terrifying Pleistocene nights and gradually developing an association with them. According to

him, the domestic dog gradually evolved as a result of this association, but also inherited the reputation of its 'disreputable ancestor' and came to be regarded as an unclean animal. Lorenz later withdrew the hypothesis of a jackal ancestor for the dog (Scott 1967:373). In Chapter 2 it was suggested as much more likely that early humankind would consider carnivores in the dark nights as 'others', rather than drawing reassurance from their presence. Konrad Lorenz' view can be seen as rather romantic.

Vesey–Fitzgerald (1957:1–28) was skeptical of Lorenz' conclusions and favoured the view that the pariah dog was the most likely progenitor of the dog. He was influenced in particular by the detailed study of pariah dogs conducted by R. Menzel and R. Menzel (1948:968–90) who believed:

> that it should be possible to breed out of the pariah dogs, in a comparatively short time, nearly every type of dog found in the Northern group, with the exceptions of the mastiff–like and dachshund–like types (the chondrodystrophic forms), and even these might be produced given the necessary time and patience to wait for adequate mutations, and continue breeding from them (Menzel and Menzel 1948:986).

Although they have not stated it as such, after all the structure of the gene had not been discovered at that stage, Menzel and Menzel seem very close to noticing that the genotype of the pariah dog could be elemental to the plastic nature of the dog, as it is now known. Menzel and Menzel (1948:968–90) considered that the possibility of breeding from the pariahs did not necessarily mean that northern and southern dogs had the same origins, and mentioned the effects of convergent and congruent evolution in different locations, such that each breed could develop independently. They

left open the question of whether pariah dogs were the original form of dog or were 'the descendants of ancient cultured breeds falling back into the wild state' (Menzel and Menzel 1948:987), which actually suggests the pariah dog *is* the original form of dog. Incidentally, the mastiff type should not be assumed to be a northern type, since excavated Sumerian statues dated around 1346–1050 BC include two dogs in association, a definite watch dog like mastiff and a curled tail dog normally accepted as a pariah dog (Huot 1978:104–10).

Frederick Zeuner (1963) reviewed arguments for the various probable ancestors of the dog in some detail. He determined from these and the archaeological evidence that the ancestors of the domesticated dog could be the various species of wolf, the jackal, or the pariah/dingo dog. He favoured the last mentioned as the most likely ancestor because of the remarkable stability of form of pariah dogs from widely disparate regions. He suggested (Zeuner 1963:110) that one of the races of wolf, perhaps the Indian wolf, was the progenitor of the dingo/pariah dog, which in turn through selective breeding with the northern wolf, led to the Alsatians and polar dogs; while selective breeding with the jackal led to the Pomeranian and terrier dogs; and selection within the group led to sheep dogs and hounds.

Klieman (1967:371) compared various canids on the basis of behavioural criteria and tentatively concluded that the wolf, domestic dog and the coyote could be grouped together. John Paul Scott (1967:373–8)

also used a behavioural approach. He analyzed ninety behaviour patterns of dogs and wolves and concluded that dogs were almost certainly evolved from wolves. The wolf behaviour he refers to may be that of a northern wolf. On the basis of his comparisons, he considered that the dog could only have been domesticated from the wolf, thus suggesting the creation of the dog through human intervention. Michael Fox (1978a:243–7) queried Scott's use of social behavioural patterns to identify the dog's ancestor as being the wolf, noting that environment, hunting and territorial instinct could create similar behaviour patterns, even in unrelated species.

Fiennes and Fiennes (1968:3) considered that the wolf adopted an association with human beings, but assumed such wolves were welcomed by Neolithic people as assets for hunting on the northern tundra. That is, they visualize a domestication scenario. Although they did see dogs evolving from different strains of wolf, they did not discuss as probable that the wolves evolved into dogs earlier than in the Neolithic, for example, in association with a Paleolithic *Homo* in an African/Levant location. Juliet Clutton–Brock (1987:38) considered that domestication of wolves led to the selection of pups such that 'in time a separate kind of animal evolved, the *dog*.' (her emphasis).

The image of man–the–hunter has led to wolf and human societies being studied comparatively. Roberta Hall and Henry Sharp (1978) in *Wolf and Man: evolution in parallel* compiled a series of papers illustrating the remarkable similarities between wolf and human evolution. Among the

contributors was Michael Fox (1978b:19–30) who described the parallels between wolf packs and human tribes in the practise of rituals, use of tools (he sees the wolf's teeth as tools), control of conflict, dominance hierarchies, xenophobia, food sharing and cooperative hunting. Fox aimed to solicit sympathy for the endangered wolf, as an animal with a similar cultural background to human beings. Henry Sharp (1978:55–79) compared how the indigenous Chipewyan society in far north America, and the wolf packs, have organized to exploit the same prey — the caribou. For instance, whereas the wolf apparently uses a strategy of overkill to spread caribou carcasses widely as food stores which are accessible during the denning season, the Chipewyans establish home bases at which the meat can be dried and preserved for times of scarcity. Where the wolves depend upon their physical prowess as hunters, the Chipewyan use ambush techniques. In the same collation of papers, Marc Stevenson (1978:179–196) offered a model of human evolution, comparing the branching of evolutionary paths of the wolf, the large extinct dire wolf and the coyote with the paths of *Homo sapiens*, and the robust and gracile hominids respectively. In retrospect the model is not convincing. Knowledge of human evolution has advanced markedly since Stevenson's paper was written, and several ideas were discussed in the previous chapter.

However, the papers edited by Hall and Sharp together challenge, as the writers intended, the situation where 'our cultural tradition continues to assert that we as humans are a world unto ourselves, hence denying the animal nature that has permitted our survival and evolution' (Hall and Sharp

1978:xi). Hall and Sharp noted the applicability of cross disciplinary analytical tools to explain behaviour of human and canid hunting societies. Their comments support the contention of this thesis, that a naturalistic perspective, which recognizes the animal nature of human beings, is a necessary part of public policy about urban animals (such as human beings and dogs) and, as is clear from the methodology of this thesis, an interdisciplinary approach has been chosen to argue the case.

The modern human being can be defined by its evident ability to colonize most parts of the world, a process that is by no means complete and began with *Homo*:

> Large brains, proper feet, nimble hands, fire, stone tools, and a range of feeding patterns were all assembled into a lifestyle package prior to any major expansion from Africa almost a million years ago (Gamble 1995:47).

Clive Gamble explains that the above adaptations were exaptations for colonization (that is, where colonization is the establishment of the species in an environment though Gamble also allows that the human species often chose to withdraw from environments). Early *Homo* behaviour, most likely in Africa, included migration around a territory to maximize the exploitation of the food and other resources of that territory. The breeding group of *Homo* comprised one or more dominant males and the females as a core, and data pertaining to the territory was brought back to the core by the non-breeding males. This required capabilities in navigation, communication, negotiation and cooperation. He considered that the first dispersal of *Homo* from Africa after about one million years ago was due to pressure to extend

their range for survival. Migration of the Ancients, as Gamble calls them, was an adaptation made possible by prior adaptations which had occurred for other reasons. Migration was thus an exaptative behaviour.

Ancient *Homo* spread through Africa, to mid–latitude Asia and Europe (Gamble 1995:8, 9). However these *Homo* could not establish permanently in many of those areas and had to retreat in the face of inhospitable climatic conditions. Until about 200,000 years ago, there is no archaeological evidence of culture for the Ancients, no hearths, storage pits or architecture. Though stone tools were made they were simply used and discarded on site, and the Ancients moved on (Gamble 1995:138, 139).

The period between 200,000 and about 40,000 years ago Gamble calls the pioneering or transitional phase and it is in this period that the adaptation for migration, that is, purposeful socialized exploration, became the exaptation for deliberate colonization:

> Moderns are modern because of the societies they construct and live in. Social context is all. More particularly, the *exaptive* social contexts demonstrated by the burst in colonization starting 50,000 years ago. From this I infer new patterns of organization which led to global humanity in a short time, at least judged by prehistoric standards. This involved only minimal further changes in anatomy and genes (Gamble 1995:181–2).

Gamble considered that the tendency to date human civilization from only the advent of agriculture is to overlook a large part of human history. His views are in line with those of this thesis which seeks to turn back the discussion of the dog to when it first began to associate with human beings, well before agriculture existed. This discussion is in order to gain some

further insight into human nature with the aim of developing better policies on urban dogs.

Evolution of the pariah dog: original din

The pariah dog was discussed at some length above. An alternative to the model whereby a wolf is tamed for human purposes relatively recently and somehow converted into a dog, is to view the pariah as a wolf which evolved to fit the novel ecological niche of human home bases, which became available many tens of thousands of years ago. An appropriate candidate would be the small southern wolf.

Helmut Hemmer's (1990:32–44) view on the origins of the dog has been adopted as most authoritative for the purposes of this thesis because he used a variety of methods to develop his statement. He compared the wolf, coyote, jackal and dog using the palaeontological record, social behaviour such as vocalization, and biological features such as their anatomy and serum protein patterns. On this basis Hemmer concluded that the dog evolved from a primitive form of wolf which was widely distributed over disparate and separate areas from Europe through Asia to North and Central America. In that wide area, evolution of the wolf ancestor proceeded at different rates and in different ways, those to the north adapting to Ice Age conditions and becoming the northern wolf — most often recognized as a 'wolf' in popular western literature. In the Arabian Peninsula and South Asia, however, the more primitive southern wolf form persisted in relative evolutionary isolation. It is this form which most resembles the primitive

dogs such as the dingo and the Madagascar primitive dog (and the Basenji, Samui and South East Asian pariah dog [Groves 1993]). Immunological studies provided particular support for the argument of an early branching of the dog from the evolutionary path of the wolf.

It is a matter of conjecture as to when the branching of the primitive dog from the southern wolf may have occurred. Hemmer (1990:43) noted that the size of carnassial[35] teeth in the southern wolf suggests an early branching of that animal from the evolutionary path of the northern and central wolves in which much more powerful carnassials have evolved. It may be that this branching occurred in an even more restricted zone than that occupied by the southern wolves, perhaps involving only *Canis lupus pallipes* and *C. lupus arabs* in India and western Arabia. These animals have large round eyes, have short sharp barks, and hunt singly, in pairs or in small groups. They may be scavengers rather than pack hunters of large game. These features differentiate them from northern wolves and more closely resemble dog behaviour.

The above information from Hemmer tends to locate the southern wolf in the area of activity of Clive Gamble's pioneering *Homo sapiens*.

Hemmer's view is similar to those put forward by Menzel and Menzel in 1948, Vesey–Fitzgerald in 1957, Zeuner in 1963 and Epstein in

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[35] Carnassial teeth are the last premolar in the upper jaw and the first molar in the lower jaw in dogs (Bradley 1959:230) — these teeth are in apposition and act as shears for cutting meat.

1971. Most recently, Vilà et al. (1997:1687–9), writing in *Science*, provided further evidence for Hemmer's view. They reported the analysis of sequences of mitochondrial deoxyribonucleic acid (DNA) in samples collected from 162 wolves and 140 domestic dogs (representing 67 breeds of dog). Samples from five coyotes and twelve jackals were also analyzed, though the results for these were not reported in detail. The researchers claimed that the results show that the ancestor of the dog is the wolf, not the coyote or the jackal, because there is much greater divergence of the dog sequences from coyotes or jackals, and less divergence from those of wolves. The relationships between the wolves and the dogs were categorized statistically. The results suggested that there is sufficient difference between the wolf samples and most of the dog samples to show that divergence of dogs from wolves occurred much longer ago than the longest time allowed for domestication of dogs by emerging agriculturists. Because divergence of wolf mitochondrial DNA sequences from the coyote's is about 0.075 (or 7.5 per cent) and the divergence can be dated from the fossil record at 1 million years ago, and because the divergence of most of the dog mitochondrial DNA sequences from the wolves' in the survey is 0.010 (or about one seventh of the mitochondrial DNA sequence divergence of wolves from coyotes), Vilà et al. suggested that the divergence of dogs from wolves could have occurred 135,000 years ago. The situation is complicated, they wrote, by the possibility of subsequent interbreeding between dogs and wolves.

The analysis of mitochondrial and nuclear DNA sequences to estimate points of divergence of species is an important tool but the results require careful scrutiny. As mentioned briefly in Chapter 2, this need has been shown by the controversy which resulted when mitochondrial DNA analysis was used to investigate whether *Homo sapiens* originated once in Africa and replaced *H. erectus*, or whether *H. erectus* evolved in several regions independently into *H. sapiens*. Initial results of the analysis showed that mitochondrial DNA may have arisen from a single small group of female *H. sapiens* some 200,000 years ago. The results, however, were shown to be incorrectly interpreted (though not necessarily wrong in their conclusion). An important reason for the misinterpretation was found to be that computer programs could not yet identify the most economical or parsimonious family tree. Repeated analyses can produce different results. Also, the portrayal of relationships graphically can appear misleadingly simple. Christopher Wills (1995:41–57) provides a history of and explanation for problems of extrapolating from DNA analysis, while Christopher Stringer and Robin McKie (1996:116–42) describe in detail how the technique can be used to augment the many other techniques available.

The Vilà et al. (1997:1687–9) results suggest that the dog has a long natural history of its own, rather than a short human mediated existence. This suggestion is in line with the thrust of this thesis. Their results suggest a time frame for the emergence of the dog and this time frame and geography fits with the emergence of colonizing *H. sapiens*. A naturalistic

perspective can view the advent of the human home base as a defining moment in the split of the evolving dog from other wolves. The evolution of the dog was thus an ecological event, not evidence of human ingenuity or of a benevolent smile from one deity or another. It will be argued shortly that the human home base, with its complement of dogs, also defined who we are. Our association with dogs therefore helps to define human nature.

The Vilà et al. (1997:1687–9) preoccupation with the 'ancestry' of the dog diverts from a simpler and probably more truthful statement: there is a cohesive group of wolves which we now call dogs, which was formed magnitudes of time longer ago than the accepted time for first domestication of the dog. The cohesiveness may be a product of a naturally selective common environment, the human home base. It would have been interesting had Vilà et al. sampled some pariah dogs and perhaps assessed these as a branch point in the canine family tree. In reviewing results of Vilà et al. and in the knowledge that breeding between canids is common, one is forced to ask: what is a wolf, a dingo or, for that matter, a groenendael, etc? By assigning names we do not necessarily assign identities. Robert Wayne, one of the researchers in the team of Vilà et al., is quoted by Virginia Morell (1997:1647–8), who commented for *Science* on the Vilà et al. paper (she related variety in dogs to styles in Nike shoes, that is, inferring both are objects which are man–made), as saying that domestication of the dog was a rare event which took special skill. This is to hark back to the concept of a man–made animal. This concept is not appropriate in the context of this thesis. It suggests creation and a breed hierarchy related the degree of

human skill required. It is worth recalling Darwin's observation that dog breeds tend to regress naturally to what may well be the basic dog, the pariah. The *Science* commentary trivializes a natural event which is no less significant than the evolution of people.

The human home base can be regarded as having a similar effect on the evolving dog as the equation of specific bees and orchids mentioned at the beginning of this chapter. Bipedal *Homo* carried food home that the dogs could scavenge. The dogs also benefited from the additional security of the base, which was protected by a combination of primitive architecture, human beings and dogs. The human home base can be seen to enhance the reproduction of the dog by bringing dogs into proximity much as the orchid does for bees. The dog may have continued to mate with its wild cousins at first but through the gradual process of natural selection the human home base sorted the dogs from the wolves just as the orchid sorts specific bees from others. The effects of mating between dogs in human home bases and wolves then would increasingly be diluted by the conservative process of natural selection. Thus it is the ecology of the human home base which is being discussed, unlike the Konrad Lorenz model of thought which focussed on human beings. It is quite likely that human beings ate the dogs (just as the dogs must have eaten human beings, especially their cadavers). Predation by people could have pressured the dogs to be prolific compared with wolves.

From the foregoing discussion it might be concluded that the sorting process established the pariah dog as the archetype of dogs. Vesey–Fitzgerald (1957:20–8) did not accept the idea, which he considered prevalent at the time, that pariah dogs were degenerated domestic dogs which, although having become semi-wild, retained the habit of associating with human beings. Vesey–Fitzgerald appears influenced by Menzel and Menzel's (1948:968) contribution to *The Book of the Dog* edited by Vesey–Fitzgerald (1948). Menzel and Menzel argued that pariah dogs constitute a well defined group of natural variants of the dog. They argued that the pariah remains relatively pure in genotype (Menzel and Menzel 1948:968–90). Vesey–Fitzgerald (1948:27–8) noted that there was ample fossil evidence of many forms of wild dogs associated with human beings and argued that the pariah dog could be the origin for all present domestic dogs:

> The great difference between the Pariah and the wolf or the jackal is that, while both wolf and jackal can be tamed (and even, on occasions, trained), their young are born wild and continue to be born wild even after generations of breeding between tamed adults, whereas the Pariah cannot only be tamed and trained (even, on occasions, as adults), but the young, after only two or three generations, are born tame. Furthermore, the Menzels, from the depth of their great experience, believe that it would be possible to breed out of Pariah dogs, and in a comparatively short time — every known type of domestic dog (Vesey–Fitzgerald 1957:27–8).

However,

> we are not conditioned to expect in a wild or semi–wild animal the characters and qualities of the domestic dog, and, when we find them there, we leap to the conclusion, without the least justification, that the domestic dog must originally have been responsible for them (Vesey–Fitzgerald 1957:26).

It is not difficult to visualize Gamble's pioneers emerging from Africa[36], their ever more organized home bases being attractive as ecological niches for the southern wolf, and the association developing biologically and in dawning awareness. Within the niches, sub–niches would exist for variants of the evolving dog. Menzel and Menzel (1948:968–90) considered that the pariah dog comprised a group of natural variants which could be classified into five types:

> Type I — Heavy extreme type (Sheepdog–like)
> Type II — Heavy medium type (Dingo–like)
> Type III — Light medium type (Collie–like)
> Type IV — Light extreme type (Greyhound–like)
> Type V — Small–grown type (Toy–dog–like)
> (Menzel and Menzel 1948:989).

The characteristic of the pariah dog which the Menzels identified as being of prime importance to human beings was:

> He is a born *watch–dog*. Because of his distrust and sharpness he is incorruptible; because of his high reactivity he can sense the approach of strangers even at a great distance, and not only can he warn of the approach of human beings, but also of alien animals, *i.e.* jackals and cats (Menzel and Menzel 1948:978, their emphasis).

Fox (1978a:244–250) drew on the research of Menzel and Menzel (1948:968–90) when he studied pariah dogs in south-west India. Fox considered pariah dogs could be classified into three types: Type 1, which

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[36] Although there is considerable debate on whether *Homo sapiens* emerged from Africa and replaced *H. erectus* or whether *H. erectus* evolved on a number of occasions into *H. sapiens*, in either scenario the southern wolf could have evolved into the dog since it is the complexity of the human home base as an ecological niche for the wolf, which is the issue. However for the wolf to co–evolve with multiregional *H. sapiens* it would have to be fairly widespread. The findings of Vilà et al. (1997:1687–9) suggest instead a geographical bottleneck for the emergence of the dog and so, within the logic of this thesis, for *H. sapiens* as well.

are home owned and tend not to roam far from home; Type 2, which are home owned but free ranging; and Type 3, which are ownerless and free ranging. The detail of his research is not relevant here, but it is relevant that Fox considered the pariah as perhaps the dog prototype of those living with 'early agricultural man in village communities' (Fox 1978a:247). If a focal food source exists, such as a butcher's stall, there is a tendency for even Type 3 dogs to develop a territorial situation similar to the other types. If any Type 3 dogs are provided with a home by a person, a similar 'sociofugal territoriality' is introduced which disrupts pack structures. The observations made in Jaipur over a period of five weeks in 1993/94 by this writer offer a different form of words: in a dense urban situation it seemed that dogs without a home base could hardly survive against competition — they thus require human protection or at least human toleration to survive, particularly as pups or aged dogs.

In a country such as Australia, where the urban environment is maintained under control, there generally are no established populations of street dogs. Fox (1978a:67) reports that a group of two male and one female street dogs was monitored over a period of about a year in St Louis, Missouri. The dogs lived in derelict buildings and lived virtually nocturnally to avoid people. Although the female became pregnant, pups were never seen. Fox concluded that: 'In spite of these feral dogs' remarkable abilities to adapt to the urban environment, it is unlikely they could succeed in raising a litter of pups under such conditions' (1978:67). It is worth considering that the urban situation where residents are well regulated is inimical to the

survival of the dog, except as a neutered pet object, and the replacement of these favoured dogs which die (usually) of old age can only be achieved through establishing satellite puppy factories of one sort or another.

The above comments on the pariah dog indicate its evolved need for a relationship with people in the urban situation. Wood used the Biblical record to determine that pariah dogs infested Jewish towns in Palestine in the time of Christ and were scavengers which had to be 'cleared off periodically with poison' (Wood 1920:64). This is a fair description of current policy on street dogs in India. Wood also noted that pariah dogs were easily made into pets. Thus the capacity to entice human protection, then and now, can be recognized as having survival value for the dog. The more desirable its characteristics from a human point of view, the greater the chance of its survival and multiplication. The ability of the dog to 'meet the market' therefore can be seen as a trait subject to natural selection and can explain the underlying variability of form which characterizes modern domestic dogs.

Section two: melting together

> ... there is a biological basis to culture and although man has the most elaborate culture, it is no less true in his case. We can see the seeds, the origins, of everything we know about our culture in the distant past. This means that every aspect of our culture can benefit from some understanding of the biology from which it sprang (Bonner 1980:186).

Introduction

John Tyler Bonner's statement above is derived from his study of many animal cultures. Section one discussed an association between human home bases and dogs in those home bases. Section two argues that there is a biological dimension to our relationship with dogs which equates to interdependence. It is not argued that the biological is the only dimension which should be considered by policy makers, however. The thesis does not subscribe to E.O. Wilson's originally extreme sociobiological viewpoint that all social behaviour has a biological base and that even the properties of emotion and ethical judgement will be explained once 'the machinery [of the brain] can be torn down on paper at the level of the cell and put together again' (Wilson 1975:575). A naturalistic perspective is important but is only one of the viewpoints which public administrators can use to develop public policy about urban dogs. Nonetheless, as will be seen in Chapter 4, sociobiology does have a place in debate on public policy concerning urban animals.

For Bonner (1980:10), culture is the transfer of information by behavioural means, particularly by the processes of teaching and learning.

The biological explanation for evolution of culture is that the brain comes to surpass the genome as an 'information processing machine' allowing the formation of social groups, learning and teaching, and adaptive responses to environmental demands. Thus natural selection in hominids will favour large brains which can transmit information by behavioural means (Bonner 1980:165, 195). Bonner's explanation adds to those of Gould (1986), Alexander (1990) and Slurink (1993), to whom reference was made in the previous chapter and who stressed the part played by natural selection in encephalization and the formation of human home bases. The similarities between wolf and dog behaviours were also noted above (Scott 1967). These points, and the information in the preceding paragraphs which links dog, wolf and human behaviours, suggests the potential for social co–evolution.

It is reasonable to suggest on the basis of natural selection that human and canine individuals with an instinct for mutual cooperation may have a greater chance of survival. Indeed, one theorist on evolution, Petr Kropotkin (1939) argued that mutual aid was a more important factor in evolution than mutual struggle. His comments were mainly directed to intraspecific mutual aid, but he did also refer to aid between species — 'sociability proper' (Kropotkin 1939:59). Within that concept of natural selection which is largely dependent on a struggle for existence, mutual aid can be viewed more satisfactorily as Alexander (1990) did, that is, as cooperating to compete. However, since this thesis mainly explores the biological basis of the human–canid relationship, discussion in the

remainder of this section concentrates on biological aspects of natural selection.

The basic premise of this section is that human home bases which had dogs associated with them benefited in the struggle for existence because of the advanced sensory perception of the evolving dogs. Gradually, in a majority of surviving bases a pooling of biological capability began. *Homo* with an improving facility of speech could further develop complex organized home bases even though the mechanics of speech required that their own olfactory capacity dwindled (as evidenced by our relatively poor sense of smell in comparison with, for example, the dog). It is illogical in the sense of natural selection for such an important survival trait to regress in an animal unless its regression was compensated for by equal or better survival traits. Because *Homo sapiens* was already in a biological relationship with the highly sensory dogs evolving in the home bases, *H. sapiens* deficient in a capacity for smell but exapted for speech could survive instead of being 'weeded out' by the process of natural selection. The resultant better organized bases enhanced the chances for survival of the dogs within them. These dogs also lost some sensory perception but characteristics of 'domesticatability' developed further in them, perhaps in response to selective pressures to survive against human predation. The incremental process may have been gradual but also inexorable.

The above argument could be advanced simply on the grounds of natural logic. However, as a test, an example is offered: the Neanderthal as a model for the evolution of *Homo* in the absence of sharing sensory labour with the dog. It will be argued that the Neanderthal retained sensory capacity and other naturally selected traits for survival and so could not evolve mechanisms for clear enunciation. Its bipedal existence may eventually have been an exaptation for enhanced phonation but not for speech. The Neanderthal thus would not be able to develop sufficiently organized home bases to benefit the survival of southern wolves nor itself benefit from an association with southern wolves. The balance between Neanderthal and *H. sapiens* survival (the two species or variants co–existed) may well have favoured the Neanderthal initially but the cooperation–to–compete association between *H. sapiens* and home base dogs is argued here as one of several exaptations which resulted in runaway evolution of *H. sapiens*, which replaced the Neanderthal over a short period some 40,000 years ago. Christopher Wills (1995) reviewed the effects of brain–environment–brain feedback loop in creating runaway evolution of human uniqueness, including the capacity for speech. His treatment of the subject is in depth and informative, but he does not refer to other animals in the evolving human environment. On the contrary, this thesis argues that the dog actually is a critical term in the equation of human identity and cannot be subtracted now for the simple convenience of makers of public policy.

Biological co–evolution

Clearly there was potential for biological co–evolution of the human being and the dog through association. Zeuner's opinion was that 'prehistoric man was, everywhere and throughout the period of his existence, surrounded by wild dogs' (1963:83). Horwitz considered 'we must include dogs in the list of carnivores potentially responsible for partly digested bones in Israeli archaeological sites from the Kebaran [some 60,000 years ago] period onwards' (1990:104) although it was also noted that partially digested bones (in faecal remains) were not unequivocal evidence of dogs, nor were they evidence that the dogs were domesticated.

In the Cartesian mould of thought, which never accepts anything as true unless it can be clearly demonstrated to be so, and given the inadequacy of archaeological evidence to establish the nature of earliest human–canid relationships, a demonstrable affection for dogs (burial of the dog with a human being) has been pressed into service to establish the earliest date of domestication of the dog. On this basis, the earliest evidence of domestication is that of Davis and Valla (1978). They reported findings of a five month old dog buried with an elderly human 12,000 years ago under a Natufian dwelling in Israel. The person's hand had been arranged to lie on the dog's shoulder, indicating affection. Morey and Wiant (1992) reported the earliest known dog burials in North America — three domestic dog skeletons dated to 8,500 years ago. According to Groves (1993), archaeological evidence is that the dog became domesticated in several

centers in North America, the Middle East, Europe and China. Protsch and Berger (1973:235–39) used the stratigraphic association between domesticated dog and sheep and goat bones to suggest domestication of the dog occurred in Europe and the Near-East at about the same time as the domestication of those animals. Hemmer (1990:44) mentioned remains of dogs found in Alaska which are at least 20,000 years old and other possible finds 12,000 years old in Japan and Iraq.

However, advances in palaeontology continue to demonstrate that the Cartesian preoccupation with the probable may mask the possible. For example, the dog must have been in a domestic association with human home bases much longer than Davis and Valla's conclusion would suggest, as discussed in the previous section. In a Lower Pleistocene excavation site at 'Ubeidiya in the Central Jordan Valley, Haas (1966:16–18) reported canid remains midway in size between the jackal and the Israeli wolf, though he noted that the data were not definitive. Nath (1973:213–22) reported evidence of 'the dog or wolf' remains with early Stone Age tools at excavations in the Sivalik Hills in the north, the Narbada Valley in the middle, and at Madras in the south of India, and commented that the finds gave some indication of animals in a pre–domestic condition. Horwitz (1990) comments have already been mentioned: dogs may have associated with Neanderthal in Israel. In *The Neandertals*, an illustration is reprinted from an 1873 edition of *Harpers Weekly* which depicts two dogs in a cave with a Neanderthal couple. The authors of *The Neandertals* apparently see no problem with the connection, since the dogs could have been 'tame

wolves', (Trinkaus and Shipman 1993:399), but a sketch in a magazine is not, of course, archeological evidence.

Consideration may also be given to logico-mathematical studies by linguists of Nostratic, an ancient language which has been argued as a real proto–language some 12,000 years old, and yet is unlikely to be the original language of *Homo sapiens* (Shevoroshkin and Markey (eds) 1986:foreword; Jones 1994:189). In Nostratic, *kujna* means 'wolf' and becomes *cu* in Old Irish, meaning 'hound' or 'wolf', while Altaic languages have 'dog' (Ivanov 1986:51–6).

Charles Darwin early perceived (but did not publish) a profound biological linkage between human beings and animals. In his notebooks of the late 1830s he wrote: 'If we choose to let conjecture run wild, then animals, our fellow brethren in pain, disease, suffering, and famine – our slaves in the most laborious work, our companions in our amusements – they may partake of our origin in one common ancestor – we may be all melted together' (quoted by Degler 1991:7). Darwin allowed for interaction between animals to affect [and effect] their evolution but one species cannot 'take advantage' of another as an object. As Darwin postulated: 'What natural selection cannot do, is to modify the structure of one species without giving it any advantage, for the good of another species' (1901b:106). Darwin did not include artificial selection here, indeed a large part of *Origin of Species* draws lessons from artificial selection, but in view of his

postulate, 'artificial selection' can be seen as an anthropocentric construct[37] and the whole concept of artificial selection for human ends can be queried.

The theory of natural selection continues to be refined. For example, Richard Dawkins is an Oxford geneticist who refined the concept of evolution to the level of genes — to their 'selfishness'. He used this basic concept to develop the idea of the extended phenotype, that is, the effect of an animal's genetic make up on its environment. The theory provided a concrete explanation for interdependency between species. Dawkins' central theorem was: '*An animal's behaviour tends to maximize the survival of the genes 'for' that behaviour, whether or not those genes happen to be in the body of the particular animal performing it*' (1982:233, his emphasis). Dawkins regarded genes as replicators which influence the world at large by their continued survival. He considered genes controlled animal behaviour indirectly, but powerfully (Dawkins 1989:61).

As Dawkins (1982:40) admitted, the basis of his theorem of the extended phenotype was not original. It was derived from Darwin's philosophy. What was original was the way Dawkins looked at the possible expression of genetic potential. Dawkins' idea of the extended phenotype strongly informs this section. The dog and human beings are seen as extended phenotypes. His idea has been interpreted as follows: the dog can

[37]An extreme form of the construct is genetic engineering, by which the genotype of an organism is deliberately modified. Although presenting major public policy challenges for the future, this technique is not discussed further in this thesis.

never be a human being (it will be argued later that administrators often forget this fact) but, in being a dog in association with human beings, the dog affects what is a human being and *vice versa*. It is a theme of this thesis that public policy which is insensitive to the culture and behavioural needs of dogs, *their biology*, also will be insensitive to the culture and behavioural needs of human beings, *their biology*.

Anatomical and other qualities of an extended phenotype: the dog

Writers on the subject of dog domestication express no doubts that the domestic relationship between human beings and dogs had an effect on the morphology of dogs in general. Anatomical changes are an established way of differentiating domestic dogs from the wild animal. For example, Zeuner (1963:102-105) provided a guide to the characteristics of domestication which have been used for archaeological or other investigative purposes:

- domestic dogs differ from the wolf type in being barrel–chested and thus having out-turned elbows so that there is a difference between the widths of their front and back gaits;
- they have a shorter and straighter back;
- they carry their tails upright;
- they have lop-ears in the adult;
- their eyes are round and directed forward;

- their faces are shorter and broader and have a pronounced 'stop' where the forehead rises from the bridge of the nose; and

- their teeth are smaller, especially the canines and carnassial (shearing) teeth.

The characteristics of domestication are considered more marked in specialized dog breeds. Neoteny, the retention of juvenile characteristics, is extremely common in domesticated animals (Zeuner 1963:104).

Serpell (1986:62) has suggested that dogs might have, in a sense, selected their human host for economic reasons. In Serpell's terms, dogs may have played upon the 'cuteness'[38] of juvenile behaviour and their powers of non-verbal communication to captivate and capture their hosts and, in doing so, juvenile traits evolved into permanent characteristics of domestic dogs, even before domestication occurred. Serpell's anthropomorphic terminology hides the corollary that canid neotenic characteristics simply had survival value for the dog.

Anthropomorphism is addressed to a large extent by viewing natural selection as operating at the level of genetic replicating units, as Dawkins does in *The Selfish Gene* (1989). Nicholls (1993:177) has warned it is important to realize that genes merely produce polypeptides, they do not

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[38] Bonner (1980:11) noted that: 'The existence of anthropomorphism is a problem to which there is no solution ...' since the mere use of words ascribes human meaning to an animal relationship and attributes human motives (for example, see the ideas of 'cute', 'captivate' and so on used above, and 'struggle', 'strive', 'slave' and so on used by Darwin).

create behaviour *per se*. Behaviour is the product of many interactions. Such interactions are so complex it is not feasible to reduce an argument to a purely genetic level and, when dealing with an animal such as the dog, with arguably similar sociability as human beings, judicial use of anthropomorphism can be justified. Nonetheless, Haynes' comment on the power of the gene is worth bearing in mind: 'There is no other process known to physics in which such a dramatic macroscopic effect can be attributed to a chance atomic rearrangement in a single, *nameable* molecule' (Haynes 1987:21, his emphasis).

Hemmer (1990:91–2) considered that in animals living in a domestic relationship with human beings not only the anatomy of the animal was affected. He argued that, compared with their wild ancestors, domestic animals had a reduced appreciation of their environment, expressed as:

- attenuation in behaviour;
- weaker flight and alarm reactions;
- less overall activity and sensitivity to environmental cycles;
- looser social bonds, reduced complexity and differentiation in society, and often an increase in social compatibility; and
- intensified sexual activity and perhaps intensified intraspecific aggressiveness (Hemmer 1990:91).

Hemmer noted that there was a relationship between coat colour and domestication. In dogs, for instance, he suggested it is conceivable that the initial breeders of the northern wolf to the dog began by eliminating the genetic alternative of the wolf's gray coat. The rationale is that there is a relationship between melanins which produce coat colour and the biochemistry of environmental appreciation (Hemmer 1990:130, 135). In simpler terms, it can be seen to be in the interests of the dog and its domesticator that its coat colour be clearly different from the wild type, and this would occur at Zeuner's second stage of domestication.

Anatomical and other qualities of an extended phenotype: the human being

> We cannot simply apply to the human situation conclusions drawn from biological models. Nonetheless they are significant and challenging as models; it will need to be shown how and where human life diverges from them (Mackie 1978:464).

It can be seen above that physical changes in the dog have been accepted as a product of domestication. It is not apparently controversial to suggest that an association with human beings constitutes part of what it means to be a dog. It *is* radical to state that part of what constitutes a human being includes an association with dogs. It is the corner stone of this thesis that the interdependency exists and needs to be addressed in public administration and the making of public policy about urban dogs.

To argue the case, resort will again be made to speculation based on the archaeological record. The sense of smell (or lack thereof) in human

beings is discussed as a case study of cooperating to compete. It seems highly unlikely that *Homo* would have survived in the company of well adapted predators without its full complement of senses. It seems highly unlikely *Homo* could act as an effective scavenger, hunter or gatherer with a poor sense of smell. Yet, *H. sapiens* does have a poor sense of smell and demonstrably is a survivor. This variant of *Homo* survived, differentiated from the main *Homo* line and eventually became its only remnant. *Homo sapiens* dwindling sense of smell must (by the logic of natural selection) have been compensated for by a trait that had greater value for survival. Such a trait could have been the capacity (or, rather, the anatomy) for complex speech. The alternations of differentiation and compensation may have been gradual and incremental, or may be visualized as happening in Gould's second tier (1985:2–12) where potential for change accumulated, as mentioned in Chapter 2.

Philip Lieberman (1984) studied the biology and evolution of language. He explains that the modern synthetic theory of evolution (mentioned in Chapter 2) merges genetic theory with the theory of natural selection. That is, natural selection has its main effect on variations in that population which defines a species and the species can adapt as a population to changing circumstances. According to Lieberman, 'The *potential* for selection can therefore be viewed as a mechanism for the survival of the species in the struggle for existence' (1984:6, his emphasis). This potential exists because the individuals of a specific population consist of parts that have evolved separately. Thus the swim bladder of a fish became the lung of

a mammal which though primarily for respiration is also necessary for vocalization; the top and lower jaws evolved separately though they function together for many tasks including modifying sounds; the larynx is primarily necessary to prevent foreign objects from entering the lungs yet also plays an important part in making sounds. He also suggests that the rules of syntax evolved from such potential: 'What I propose is, in essence, that the rules of syntax derive from a generalization of neural mechanisms that gradually evolved in the motor cortex to facilitate the anatomization of motor activity' (1984:67). That is, the method of speech also is related to our neural anatomy that evolved for another purpose in a foregoing species[39].

In fact, in noting the very high rate of human speech (the duration of a vowel in connected speech is only 100 to 300 milliseconds), Lieberman comments '...the process of natural selection appears to have produced a *speech*–perceiving system that is matched to the constraints of speech production' (1984:173). Because of these complex interactions, Lieberman dismisses the idea that the unique human ability for speech is due to a mutation. If speech were innate, it would not take a human being so long to learn speech. Our facility for speech appears unique because, he says, none of our less linguistically gifted ancestors survived as demonstrations of the link. He considers, for example, after reviewing the evidence, that the chimpanzee Washoe, which was trained to use sign language, could

[39] Lieberman's proposal raises images such as 'chewing over an idea' or 'words sticking in ones maw'.

conceive of words and classes of things, and could keep up with story lines, even though she did not have the anatomical capacity to enunciate her thoughts in spoken words[40].

Under natural selection a horse might survive because its larynx is better adapted for respiration while a human being may survive because its larynx is better adapted for phonation. Clearly the end result is conditioned by the complex environment in and of the animal concerned. The effect of the evolution of the separate but functionally related parts of an individual is that the species reaches a functional branch point and may split. Lieberman explains the functional branch point theory for evolution by natural selection as '...a process [whereby] *gradual anatomical* change can at certain points yield *"sudden" functional* advantages that will lead to qualitatively different patterns of behaviour in a species' (1984:256, his emphasis). He points for example to the 'startling' difference in organization between *H. sapiens* and Neanderthal cultural remains and suggests that this shows that their progenitor, *Homo erectus*, may have reached a functional branch point. This observation, which is critical to this thesis, will be discussed in detail shortly.

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[40] Chimpanzees apparently have an acute sense of smell, however. According to Lieberman (1984:231), Jane van Lawick Goodall observed patrolling chimpanzees sniffing the ground or picking up leaves and twigs to sniff for scent. Chimpanzees hunt and eat other animals, including primates, and it may be that primate hunting behaviour originated in the trees, not the savanna (Boesch 1990:20–3). Arboreal animals thus require an acute sense of smell to survive and hunt.

At this point Richard Dawkins' theory of the extended phenotype may be recalled and it is not difficult to visualize that, if separately evolving parts within individuals of a specific population can bring that population to a functional branch point, then a complex of evolving species, even though each specific individual and the parts within it are evolving separately, may itself reach a functional branch point. That complex may, for the sake of convenience, be termed the human home base, and the specific individuals may, through the coincidence in time of their evolution and the cohesiveness of their evolution, be seen as including the loquacious but 'hard–of–smelling' human being and the hardy southern wolf. At that functional branch point, the Neanderthal may be visualized as a belt–and–braces model for human evolution, journeying along the other branch until it reached its end some 40,000 years ago. Lieberman states succinctly: 'Classic Neanderthal hominids thus appear to represent the terminal state of a conservative trend in hominid evolution' (1984:328). The Neanderthals were adapted for strength and agility yet were replaced by a species that was 'inferior save for enhanced speech abilities' (Lieberman 1984:328).

The functional branch point of human existence existed at some point in time that can only be guessed at, and it may have existed at one geographical point or at several, but it certainly seems to have existed because the fossil record shows that human beings and Neanderthal co–existed. Lieberman thought that flexion of the base of the cranium in fossils of *H. sapiens* and Neanderthal indicated that the functional branch point

away from *Homo erectus* occurred over 100,000 years ago and perhaps up to 250,000 years ago.

This thesis uses an argument that the human capacity for speech is made possible by human beings being in association with dogs: that capacity proved to have ultimate survival value when compared with the Neanderthal. To demonstrate the likely value of the argument, the anatomy of the Neanderthal is discussed with particular reference to its skull. The Neanderthal is an outcome of natural selection. It had a massive face, a massive head and a massive body to support the head. Although it would appear to have been better adapted for survival it was superseded by *Homo sapiens*.

The French anthropologist Marcellin Boule described the Neanderthal skull: 'the nose, separated from the forehead by a deep depression, is short and very broad; by a prolongation of the malar bones, the upper jaw forms a kind of muzzle ... the maxillaries stand out as a continuation of the zygomatic arches, and accentuate the muzzle–like form of the face ... orbits are widely separated and relatively large, half as great again as modern man of similar brain capacity ... this fossil man, which in so many of his characters approaches the apes more than any other man, is nevertheless so widely divergent from them as regards his nasal region, that instead of being simian in this respect, he might be looked upon as *ultra–human*' (Boule 1923:194, 202, 205, his emphasis). A Neanderthal child's skull from La Quina also showed the muzzle–like appearance 'due to the

absence of canine fossae, as well as on account of its immense rounded orbits and broad nose' (Boule 1923:473). A skull found in what was then Northern Rhodesia resembled 'to an extraordinary degree' the European Neanderthal skulls in their 'muzzle–like' appearance.

The widely spaced orbits presumably were an adaptation of a bipedal animal to a very large nose or muzzle. With a muzzle blocking the vision of the Neanderthal, manipulative skills may not have developed as they did in us. Erik Trinkaus and Pat Shipman (1993:414), who are leading authorities on the Neanderthal, considered that the Neanderthal depended upon the biological processes of evolution rather than cultural evolution and these processes locked them into massive bodies. They suggested that the very big noses of the Neanderthal were to warm up the Ice Age air they inhaled. Jelinek (1994:67–92) noted, however, that conclusions about the functions of the markedly projecting faces, large anterior teeth, large nasal apertures and large orbits of western European Neanderthal could be premature, since there is evidence of survival of hominids in cold climate Europe prior to the Neanderthal. On the other hand, Bar–Yosef (1994:23–66) noted that repeated attempts by *Homo erectus* to colonize temperature zones of Eurasia were unsuccessful and it is this point which Gamble (1995) uses to argue that the adaptation of *H. erectus* for migration was an exaptation of *H. sapiens* for colonization.

In 1981 the American Academy of Sciences commissioned Jay Matternes to reconstruct a Neanderthal face from a skull about 46,000 years

old from the Shanidar cave in northern Iraq. Although the Academy considered that Boule had misunderstood aspects of the Neanderthal skeleton (one which he studied apparently was deformed by arthritis), the skull the Academy used did have heavy brow ridges and a projecting jaw. Soft structures such as olfactory tissues (which include olfactory membrane supported on cartilaginous and light turbinate bones) have not survived in the fossil record and Matternes had to rely upon evidence of bony ridges for muscle attachment to guess the shape of overlying structures. Matternes' reconstruction showed the Neanderthal with a large nasal and maxillary area (Rensberger 1981:40–51). The matter was addressed again recently by a team from *National Geographic* who reported the use of computer simulation at the University of Illinois to try to depict a Neanderthal face: '... so massive are the Neanderthal crania that the model's eyes stretched noticeably — they had to be redrawn on the screen manually ... some experts believe Neanderthal noses were even bigger than the computer's reconstructions' (Gore et al. 1996:2–35).

According to Trinkaus and Shipman (1993) the Neanderthal displayed elements of early modern human behaviour: they had large complex brains, practised burial, cared for the injured and wore ornaments. Some of these claims are controversial. There appears to be general agreement that in behavioural terms the European Neanderthal at least can be regarded as non–modern. They were supplanted about 40,000 years ago by human beings, with modern behaviour, who arguably arose in Africa and

spread rapidly to other parts of the world, either by replacement, gene flow, or variable combinations of the two processes (Klein 1994:3–17).

The explanation by Trinkaus and Shipman (1993:414) for the large noses of the Neanderthal seems unnecessary. The more parsimonious explanation for the large faces and noses of the Neanderthal is that they were locked in a biological process of evolution, and the consequences included the retention of an apparatus for an advanced sense of smell which was necessary for their survival. They were the conservative model for human evolution. This view is one cornerstone of the thesis' argument for co–evolution of human beings and dogs.

Apparently due to the fact that the human face developed vertically (Arensburg et al. 1990:137–46) the larynx descended to about the level of the sixth vertebra and rotated backwards, suspended by the hyoid bone. In most mammals, the larynx is found high in the neck such that there is a direct passage for air between the back of the nose and the lungs. This enables the animal to breathe and swallow at the same time, but 'severely limits the array of sounds an animal can produce' (Laitman 1984:24). This situation exists in the human infant until about the age of eighteen to twenty-four months, when the larynx begins to descend. It appears that this process may have begun with *Homo erectus* (Laitman 1984:20–7). The net

effect has been summarized by Hockett and Ascher:

> The development of upright posture, with the completion of the migration of the face from the end to the ventral side of the head, turns the axis of the oral cavity to a position approximately at right angles to the pharynx, and introduces a marked separation of glottis from velum (Hockett and Ascher 1967:31).

In non-technical terms, a resonating chamber was formed as the large head of this bipedal *Homo* animal rotated[41] so that it was supported at its center of gravity by the vertebral column. The 'dropped face' of human anatomy has obvious advantages in permitting speech but is inefficient in other ways: for breathing, swallowing, jaw opening and chewing; and the mandible becomes crowded with teeth.

Neanderthal seem to have had a hyoid bone like ours, suggesting that the larynx had already become correctly situated as a 'voice box' in them, since a 60,000 year old hyoid bone was found in a Neanderthal excavated at Kebara in Israel. This suggested that, if supralaryngeal space and hyoid positioning are the criteria, the Neanderthal speech apparatus was capable of the range of sounds necessary for modern speech (Arensburg et al. 1990:137–46).

While it appears to be generally accepted that the descent of the larynx is a factor in *Homo* capacity for speech, it is only one factor. Lloyd DuBrul was among the first to consider the evolution of the apparatus for

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[41] The rotation can be imagined as around an axis through both ears.

speech in detail. He concluded that 'the oral apparatus, freed wholly from prehension and largely from preparatory feeding, has become available for communication' (DuBrul 1958:41). He was referring in part to the many tasks that the mouth parts of simpler animals perform.

Philip Lieberman (1984) considered that Neanderthal were specialized for chewing at the expense of phonetic efficiency. According to Lieberman, '...the pongid characteristics of the classic Neanderthal tempromandibular joint are consistent with its opening and closing like a gorilla's or chimpanzee's. The massive brow ridges of classic Neanderthal fossils are also consistent with the pongidlike tempromandibular joint' (1984:283). The Neanderthal thus had a powerful bite. Lieberman noted that the Neanderthal tongue was positioned almost entirely within the oral cavity, the skull is massive, the teeth positioned well forward and not compacted, and the palate is long in comparison with human palates. He concluded that the Neanderthal had inferior capacity for speech compared with modern human beings (Lieberman 1984:323).

Mentioned above is the flexion of the base of the cranium as a functional branch point. The effect of this evolved concavity at the base of the cranium on speech in *Homo* is more controversial. Laitman (1984:20–7) considered that there is a relationship between basio–cranial flexion and the capacity to make a range of sounds, but noted that full flexion had not been observed except in *Homo sapiens*. However, Arensburg et al. (1990:137–46) doubted the reliability of this criterion as an indication of the capacity

for speech. As already noted, they considered Neanderthal were anatomically capable of speech. Davidson and Noble (1993:165–170) referred to crowding of the teeth in *Homo* compared with other primates as facilitating the uttering of vowels.

Steven Pinker (1994:165–70), in his study on the genetic basis for language, noted that speech actually is created through a combination of gestures made by the tip, body and root of the tongue, the lips, soft palate, nose, and the vocal chords. Of these organs, he regarded the tongue as most important. Pinker proposed that the basic organization called language is heritable and subject to natural selection, there being, probably, a 'common anatomy in all the world's languages' (Pinker 1994:106) and dialects were the product of evolution, some becoming dominant and spreading, while others became extinct. He regarded Darwin as 'history's most important biologist' (Pinker 1994:360) and argued emphatically that language expertise accounted for the survival of human beings, though perhaps rudimentary language was used by hominids and certainly by early *Homo sapiens*.

The above paragraphs have indicated the involved and evolved process inherent in a capacity for speech in human beings. To this complicated chain of events must be added the development of frontal lobes of the brain and also of neural circuitry that may not simply have been a matter of a large brain leading to language but to a reorganization driven by natural selection (Deacon 1989:367–401). The whole process probably

occurred over a period spanning early *Homo* species and indicated a connection between primate calls and human spoken language.

Perhaps, as the cranium expanded and turned forwards to accommodate the developing convolutions of the brain, there would be a tendency for those *Homo* with flatter faces to survive since they had better stereoscopic vision to enhance the use of tools and because their mouths became smaller, and their bite rounder, such that the tongue was under better control, even if it meant impacted teeth (there is likely to have been sufficient variation to permit natural selection because gracile as well as robust forms of *Homo* existed). Such would not be the case with Neanderthal, say, which apparently 'retained' a muzzle and widely spaced eyes to see around it. Their developed sense of smell was thus probably retained. *Homo sapiens* does not have a muzzle, which suggests that our ability to smell was reduced in comparison with Neanderthal.

However because *H. sapiens* evolved in a human home base in which the evolving dog also was present, *H. sapiens* could develop its natural potential for speech instead of being deleted from the scene by natural selection because of *H. sapien's* lack of sensorial fitness. The senses of the evolving dog were a safety net for the human leap into Gould's second tier of evolution.

It is clear that *Homo sapiens* do have a reduced capacity to appreciate the environment compared to most other complex animals. The capacity can be magnitudes lower. In regard to the sense of smell, for

example, even the modern dog is magnitudes better than the modern human being and is necessary for activities which protect the survival of the human home base, such as tracking, detecting bombs and drugs, and so on, because of its keen sense of smell. Fuller and DuBuis (1962:420) reported data showing that the surface of the olfactory region in human beings is about 500 millimeters square, whereas that of a large dog is 7,000 millimeters square. They accepted that the effect on olfactory ability was related to surface area rather than to differences in sensitivity of human/canid membranes. Becker et al. (1962:778) reported that the sense of smell in the dog was 'phenomenal'. They compared the ability of human subjects and dogs to detect by smell a substance, the identity of which was classified. The human subjects could detect 1 gram of the substance wrapped in a sterile gauze pad but not a tenth of a gram, while the dogs readily detected a tenth of a milligram of the substance under similar circumstances. Desmond Morris (1986:57–9) wrote that a dog has 220 million smell–sensitive cells whereas the human being has only 5 million. He also considered that the dog is far superior at detecting higher pitched sounds than a human being, though the relative abilities are similar in respect of low pitched sounds.

In relation to the theme of the dog as primarily a watchdog at the beginning of its relationship with human beings, it is interesting that Graham Adams (1993:233–48) has shown that the sleeping pattern of modern dogs is different to that of their human keepers, the dog sleeping in 16 minutes cycles of sleep followed by wakefulness for 5 minutes while their keepers slept for several hours in cycles of deeper sleep of about 90

minutes duration. Adams noted that sleep in a group of dogs was asynchronous, and considered this would give a pack of dogs an adaptive advantage for survival. He found that, while the short sleep cycles and asynchrony led to barking which disturbed neighbours, those who kept dogs for protection as well as companionship welcomed their dogs' watchfulness. Adam's study involved twenty–four urban dogs in a modern Australian situation, and the relevance of the data to human home bases tens of thousand years ago can be questioned, but it does indicate the possibility of a long standing bio-economic relationship between human beings and dogs. In another study, Adams and Johnson (1994:151–62) found that barking of other dogs was the main stimulus for barking by study dogs, and it is intriguing to imagine the signaling effect between allied home bases tens of thousands of years ago.

Hemmer's arguments that animals in a domestic relationship lose some of their capacity to appreciate the environment were mentioned above. Paul Shepard (1973) considered that human beings were similarly affected. He saw the hunter–gatherer stage in human development as the golden age of human development, and agriculture as slavery of the domesticators. Thus, according to Shepard, civilization led to the domestication of people, with a resultant reduction in their environmental appreciation. The popularity of the dog as a companion was, to Shepard, 'because of our modern personal isolation and our sick ecology' (Shepard 1973:265). Shepard assumed a close relationship between human and 'wolf like' behaviour and culture. He believed that the events of the past ten thousand

years (domestication) were an unfortunate digression from our 'true' natures (Shepard 1973:93). Shepard's and kindred views will be revisited in Chapter 5.

Walens (1987) probably would disagree with Shepard. He argued that the hunting way of life itself was inevitably domesticating. The relationship between hunters and prey was reflected in their relationship with their society. Support for Walens' arguments is clearly provided by the discussion of the wolves and Chipewyans above. Walens noted:

> Thus, hunting becomes no less domesticated a task than herding or horticulture — a means of domesticating both the forest world in which the prey lives and the social world in which the hunter lives (Walens 1987:294).

Both Hemmer and Shepard understood that domestication has evolutionary effects, resulting in co–evolution and cultural changes in both human beings and dogs. Domestication can be argued as a late stage in the melting together of human and dog societies, and as such should be noted by makers of public policy.

Of course there are purely economic reasons for the keeping of dogs by human beings. These are summarized in the following paragraph. However it may be noted that the discussion in this section provides grounds for the argument that the obvious usefulness of the dog to human beings is because of an evolved interdependency between two animals (an extended phenotype) rather than the result of premeditated exploitation of another animal (which would not be allowed by Darwin under the theory of

natural selection (1901b:106)). The survival importance of this relationship is enduring even when viewed at the level of national home bases. The policy statements of the Books of Moses were referred to in Chapter 2 as an example of a 'home base operations manual'. The competition for home bases in that region survives in the form of the Israeli/Palestinian conflict. The report (*The Sydney Morning Herald* 31 January 1995:8) that Israel, with advanced military technology, has been unable to prevent the ingress of Palestinian suicide bombers and has had to resort to stationing watchdogs along the West Bank, is an example in support of the argument of this thesis, that there is a continuing evolved biological dimension to our relationship with dogs. An anecdote from the Vietnam War (Roderick Reeve pers. comm. 1998) reinforces the point: Reeve was told by a woman during a recent visit to Laos that, during the war, American B52 bombers returning from missions to Vietnam unloaded any unused bombs over Laos, in the vicinity of the Ho Chi Minh trail. Since the bombers were at very high altitude people living in the vicinity of the trail had no warning of the falling bombs but, when they saw their dogs running for the caves into which they had moved for refuge, they also ran for cover. According to the Laotian women, without the dogs as sentinels, their group could hardly have survived.

In recorded history the dog has been used for food, clothing, leather, medical products, guarding, hunting, warmth, fighting, tracking, drug detection, searching for people, controlling rodents, scientific experiments, recreation, display, racing, companionship, social status, cult objects

(Hemmer 1990:1–12) and undoubtedly many other things. The economic benefits associated with dog keeping do have associated costs. For example, there are several diseases transmitted between human beings and dogs, and the relationship between dogs and people has not always been harmonious. Zeuner provides this anecdote from the time of the Pharaohs:

> An eighteenth-dynasty officer stationed on the Palestine border wrote home complaining bitterly about the fierce street-dogs of the garrison town and relating how a little wolfhound protected him from the dangerous packs (Zeuner 1963:109).

However, the theme of this chapter is to maintain a macro biological view. Therefore, to indicate the relationship between human beings and dogs in the vocabulary of public policy as a process, and to continue with the image of the dog as a factor in competition for human home bases, the following section discusses the European colonization of Australia and stages in the public regard for dogs.

Section three: arrival of the urban dog in Australia and the evolution of legislation

In this section, evolution is used metaphorically to trace the history of legislation about urban dogs to the present in the Australian Capital Territory. There is little biological vocabulary used in this section but it will be seen that the theme of discussion from Chapter 2 can be maintained. Dogs played a role in the survival of British home bases early in the colonization of Australia. They soon had an administrative impact as well.

Arrival of British home bases and the dog in Australia

Although the dingo was already present in Australia it had apparently disassociated from Aboriginal home bases. H. Epstein (1971: vol. 1:115) was of the opinion that the dingo was a domesticated dog which has returned to the wild state. The logic of a naturalistic perspective suggests that Aboriginal home bases did not have advantages for the dingo over and above its life in the wild, in this continent where presumably marsupial predators did not compete well with, nor threaten the survival of, the dingo. What does seem clear is that the dingo must have been brought to Australia as the dog of human seafarers.

British home bases were established in Australia from January 1788 as a deliberate process of colonization, the colony being named New South Wales. Naturally, dogs were an integral part of those home bases. Pens of puppies were present on vessels of the First Fleet (Jeffrey and Shaw 1965 IV:72–6). At least one of the vessels, the *Scarborough*, carried an adult dog, Hector, a Newfoundland dog, which soon figured in official dispatches.

Strangely, the inventory of livestock in the colony as at 1 May 1788 provided by Governor Arthur Phillip to Thomas Lord Viscount Sydney in the Privy Council (Governors' Despatches to and from England 1914 1:52) does not mention dogs or cats. Some must have survived the journey, but perhaps were not regarded as 'livestock'. The animals were regarded as necessary for the survival of the colonial home base. For example, in his seventh despatch to Lord Sydney, dated 28 September 1788, Phillip notified

his intention to send dogs and cats to Norfolk Island, where Lieutenant Gidley King was attempting to establish a settlement:

> No quadrupeds have been seen [on Norfolk Island] except rats, which at present overrun the island, but which the cats and terrior dogs intended to be sent will, I hope, soon destroy; until that is done, their crops must suffer very considerably (Governors' Despatches 1914:72).

At the time, Phillip clearly considered imported cats and dogs to be one means to the end of sustainable settlement on Norfolk Island. Rats also caused great damage to stores on the mainland, as Phillip reported in February 1790 (Governors' Despatches 1914:143). It seems the solution was to 'loose' (Collins[42] 1798:82) the dogs onto the rats. The dog played a part in exploration, as when two soldiers and a dog went missing in thick scrub at Rose Hill (which was to become the site for the city of Parramatta) in May 1789: the dog returned to camp nine days later, 'almost famished' (Collins 1798:69) but the soldiers seem to have perished. Perhaps reflecting the naturalistic perspective of the time, David Collins, who was Judge Advocate and Secretary of the colony, reported to Lord Sydney what might be considered minutia today:

> An instance of sagacity in a dog occurred on the arrival of the Scarborough, too remarkable to pass unnoticed; Mr Marshall, the master of the ship, on quitting Port Jackson in May 1788, left a Newfoundland dog with Mr Clark, (the agent on the part of the contractor, who remained in the colony), which he had brought from England. On the return of his old master, Hector swam off to the ship, and getting on board, recognized him, and

[42]As already mentioned in the previous chapter, David Collins was the first Judge Advocate and Secretary of the Colony of New South Wales, apparently serving for about ten years before returning to England.

> manifested, in every manner suitable to his nature, his joy at seeing him; nor could the animal be persuaded to quit him again, accompanying always when he went on shore, and returning with him on board (Collins 1798:124).

Since *Scarborough* made her second voyage to Australia in 1790 with the Second Fleet (Hughes 1988:105) and the intervening period had been one of privation for the colonists and convicts, Hector's memory seems good. Collins (1798:556) also reported the desire of the Aborigines to obtain spaniels and terriers as watch dogs from the early settlers. The speed with which Aborigines adopted these dogs is remarkable, especially if compared with the apparent lack of interest by the settlers and their successors in adapting to Australian wildlife.

In short, there are indications that the imported dog played a positive part in the British settlement of Australia. However, the early perceptions of native dogs by the settlers were often negative. Native dogs were a clear threat to the survival of the colony's imported livestock, and so, to the colony itself. In April 1788, Phillip returned from an exploration of the region to the west of Port Jackson and learned that five precious sheep and a lamb had been killed very near the main camp, apparently by native dogs (Governors' Despatches 1914:32). Phillip was mortified, since the tiny flock was the key to independence from imported stores, but adds darkly that the animals were 'supposed to have been killed by dogs belonging to the natives' (Collins 1798:27). Phillip would have had good reason to be suspicious of foul play. The early records are a litany of mischief by convicts who clearly did not respect the fledgling government's aims for survival of the colony.

On the other hand packs of 'native' (Collins 1798:124) dogs apparently did roam around the colonists, since a few years later in 1794, an elderly convict was partially consumed by them after he was murdered near Parramatta.

An emerging need for regulation and legislation

The control of dogs soon became an aim of official policy[43] in Australia. Hardly a decade after colonization, for example, this statement was issued:

> as the breeding stock of sheep is of the greatest consequence to the welfare of this colony, no person is to suffer any cur dog to follow them, or any cart, wheelbarrow, &c., the Governor having given permission to those who have flocks of sheep to order their herdsmen to kill any dogs that approach them, and the owners will forfeit treble the value of any stock killed by them. Persons who keep cur dogs that are in the habit of flying at horses are to destroy them, otherwise they will be indicted as a nuisance. It is recommended to those who have more dogs than one (except greyhounds or terriers) to kill them, as a tax will shortly be laid on all cur dogs. (Philip Gidley King, Government and General Order, 17 February 1801).

There is thus no doubt that King considered that a policy of controlling dogs (or at least cur dogs) and of penalizing their owners was necessary for the survival of the infant colony. The order does not explain why greyhounds and terriers were exempted. Presumably they were not perceived to be a

[43] The writer is indebted to Mr Gerry P. Walsh of the Department of History at the Australian Defence Force Academy in Canberra for guidance on official documents and on the *Sydney Gazette*, which was the first Australian newspaper. The only parliament on mainland Australia between 1824 and 1856 was the Legislative Council of New South Wales. Before the Council was established government was by proclamation of the Governor. Unless specifically exempted, the Acts of the British Parliament applied in Australia (Walsh pers. comm. 1994).

threat to the sheep[44]. The same Order referred to the great damage done by stray goats, which were to be caught and forfeited to the Orphan School. Goats must have been able to survive depredation by the cur dogs. Indeed, as will be shown later, in early legislation, dogs and goats often were dealt with together.

The above General Order was soon followed by others. However, they appear to have had a limited impact. According to reports in the *Sydney Gazette* of 15 August 1812 the streets of Sydney had been rendered dangerous to all passers-by, due to 'the Extraordinary Increase of Curs and Mongrel Dogs of a base and worthless Description' (Walsh pers. comm. 1994). The *Sydney Gazette* on 18 November 1820 again called for public attention to 'The great and alarming increase of the canine species in this Colony' which was the cause of accidents and attacks (Walsh pers. comm. 1994).

The *Sydney Gazette* also dealt sympathetically with some dogs. For instance, on 22 July 1804 it carried the story of a 'valuable Dog, whose fidelity had rendered him a favourite' which had been cruelly struck by, probably, a cutlass, which the *Gazette* judged as a crime 'of wantonly exercising our superiority over the brute creation'. This luckless and reportedly docile canid was at the time recovering from a massive bruise probably resulting from a kick. The bruise had required the surgical

[44]Perhaps their utility was important, or perhaps a gentleman's dog would not *do* that sort of thing?

attention of a '*Canine* operator' (the *Gazette's* emphasis) which Walsh (pers. comm. 1994) thinks may be the first mention in the Australian press of a veterinary surgeon. The *Gazette* of 1804 also on several occasions carried advertisements offering rewards for lost dogs.

It also seems that the construction of the 'irresponsible' dog owner by society began early in the colonization of Australia. Examples of a separate classification for curs and other dogs are given above. The manner of dog keeping could also similarly be used to classify people socially. For example, the *Gazette* of 29 April 1804 commented tongue–in–cheek on the propensity of many poor families to keep dogs, even when the family had barely enough to feed its human members. A story treated, with what might be called amused contempt, the case of one poor family which maintained five dogs. According to the reporter, the family ascribed values to these dogs which were laughable. For example, the family maintained *Brin* the terrier as a mouser when, as the reporter condescended to point out, 'empty cupboards are seldom infested' with rats or mice. Among these 'INESTIMABLE' (the paper's emphasis) dogs, the reporter wrote, was one *Tiger* which demonstrated dexterity 'in leaping the fence to the annoyance of passengers by night, and his agility in pursuing and nipping the heels of horses at the no small danger of the riders neck by day'. The dogs apparently survived by stealing food from the family children 'whose fingers bear the mark of many a tooth'. The reporter was of the opinion that, 'unless a family superstition may suggest that its well doing is dependent on the number of

its dogs', the dogs should be disbanded and, perhaps, be given to a better home.

On 14 April 1830, the Legislative Council of New South Wales passed an act to abate 'the nuisance occasioned by the great number of dogs which are loose in the streets' of Sydney, Parramatta, Liverpool and Windsor (Public General Statutes of New South Wales 1861:217–20). This act was continued in 1832 and broadened in 1835 to encompass dogs in the streets of certain towns and on highways in New South Wales. The act of 1835 became the basis for current legislation, as will be discussed below.

It is clear that dogs were very much a part of the tapestry of colonial life, though they must often have been unwelcome in polite society.

Convicts were a constant feature of early colonial life in Australia, as Marcus Clarke has portrayed so graphically in *For the Term of His Natural Life*, first published in book form in 1874. He wrote of the convict system creating a class of people who were sworn haters of law, order and 'free men' (Clarke 1987:48). Dogs were used to guard and restrain convicts, as a survival strategy of 'free men'. For example, mastiffs were chained across the narrow isthmus which connected the rest of Tasmania to the hell hole which was the Port Arthur penal settlement. Among the convicts the mastiffs shared legendary status with the sharks which cruised the waters there (Clarke 1987:306, 316).

The idea for a line of dogs was apparently conceived in 1832 by Ensign Peyton Jones:

> It occurred to me that the only way to prevent the escape of Prisoners from Port Arthur in consequence of the noise occasioned by the Continual Roar of the Sea breaking on the beach and the peculiar formation of the land which rendered Sentries comparatively useless, was to establish a line of lamps and Dogs. I therefore at once covered a way with Cockle shells, so as to show a brilliant light on the ground at Night, and proposed that a certain number of Lamps should be supplied and rations for a certain number of dogs be so placed that they could not fight, although eat out of the same trough, (1/4lb. suet, 1 1/2lbs. broken, damaged biscuits from the convict ships daily for each dog), and render it impossible for anyone to pass through ... (Brand 1978:8).

The dogs remained in place until the 1870s. Jones' comment is quoted to show an extremely instrumental view of dogs (compare the story of Hector, above), but also to introduce the dilemma facing public policy makers today when they seek to regulate privately owned 'dangerous dogs' in view of a long history of official sanction for the use of dogs (which cannot discriminate along human moral lines) to attack people. It is also worth reflecting on the fact that Jones argued in 1852 that his innovative strategy should earn him a grant of land for services to the colony (Brand 1978:8), since no convict had ever successfully evaded the dogs (two convicts did escape by other routes).

The image of the dog in the early colony seems to have been variable. In *For the Term of His Natural Life*, Clarke conceded to his villain

Frere[45] the 'tenacity of a bull dog' (Clarke 1987:87), but he also made it clear that the fact that Frere's conversation was limited to dogs, horses and so on, branded him as not quite a gentleman (Clarke 1987:378). Coursing dogs of dogs was frowned upon by the establishment, if cartoons by Taylor (c1883) are a reliable guide to mainstream perceptions of the day: the participants in the sport are depicted as drunken clowns. In Naracoorte in South Australia, attractive purses were won by owners of greyhounds chasing paddy melons (a species of wallaby) in 1873 and, in the following year interest in this sport boomed, only to decline by 1884 (Beilby 1897:133). On the other hand, dingoes received little sympathy: as 'it will be a blessing for the squatters when the brutes are extinct' (Beilby 1897:431–2).

Dog fighting appears to have been commonly practised as a sport. In 1840, the New South Wales Legislative Council selected a committee to recommend on the prohibition of shooting on Sundays, following complaints from residents of the Cook's River, Botany and Petersham districts of Sydney. The committee recommended that the Bill also include a prohibition on dog fighting and other 'riotous pastimes for amusement and profit' such as cock fighting, boxing, breaking in and racing of horses, and gambling, as these pursuits profaned the Sabbath. However, a majority of Council members considered that 'such coercive enactment would make for

[45] The name of the first Commandant of Port Arthur was Lieutenant Fry (Brand 1978:5).

an abundance of hypocrites rather than good Christians'[46] (Crowley 1980:12) and so the Bill addressed only the carriage of firearms and shooting for sport on Sundays. Dog fighting continued in 1859 to be associated with the low, dark side of life in Sydney and Melbourne (Crowley 1980:390),[47] and the bull terrier, which was the favoured breed to pit against other dogs, was then known as the 'puglist's pet', or the 'ruffian's pride' (Beilby 1897:338).

Dog keeping began to enjoy a better status in Australian polite society with the advent of dog shows, though it seems even the breeding of dogs for show initially was seen as a degrading hobby[48]. However, when British and Russian royalty began to take an interest in the pastime, and when there was a surge of interest in dog shows in England after the first show held at Newcastle-on-Tyne in June 1859, such 'prejudices' by 'narrow-

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[46] Report from the Committee on the Shooting on Sunday Prevention Bill, in the New South Wales Legislative Council, Votes and Proceedings, 1841 (cited by Crowley 1980:12).

[47] The pursuit of dog fighting reportedly still occurs covertly in modern Australia, despite its present illegality. In 1986, the then Secretary Manager of RSPCA (Queensland) regarded its continued existence as an affront in a 'Christian society' and police described human participants as 'low-lifes' (Robson 1986:53–6), indicating the robustness of the dog as an icon of social divisions.

[48] The unabashed anthropocentricity of breeders such as Walter Beilby might have been a factor. Beilby was an influential breeder of dogs in Australia at the turn of the century. In promoting the then novel pastime of breeding of dogs as a hobby in Australia, he wrote:

> A great error that is frequently made, by beginners, is to destroy puppies immediately after they are born ... It is always better to wait a few days, before consigning the rejected to the pail [for drowning] (Beilby 1897:34).

Beilby's view (like that of Bacon and Descartes, mentioned in Chapter Two) is unequivocally instrumental: pups are a means to an end. It remains the view of the industrial producers of a wide range of animals for economic gain, despite challenges from environmentalists and animal welfarists who argue that an instrumental approach to nature is inappropriate.

minded and ill-informed people' (Beilby 1897:8) began to die out. Still, although dog exhibitors did compete in classes at various agricultural shows from 1865, it seems it was not until 1883 that the competitive exhibition of dogs achieved a firm footing in Australia.

Thus the urban dog quickly began to fill niches in Australia and proved to be as robust a sign of social divisions in colonial Australia, as it had in England.

Evolution of the Dog and Goat Act, 1898

Early legislation developed by the Legislative Council of New South Wales was categorized according to its order in the reign of particular British sovereigns. The first legislation pertaining to dogs at large was 11 Geo. No. VIII, passed on 14 April 1830, to come into effect on 1 June 1830:

> for abating the Nuisance occasioned by the great number of Dogs which are loose in the Streets of the Towns of Sydney Parramatta Liverpool and Windsor ... Whereas the Streets of the Towns of Sydney Parramatta Liverpool and Windsor are infested by the great number of dogs which are allowed to go loose at all hours of the day and night to the dangers of passengers as well as to the great annoyance of the inhabitants at large And whereas it is expedient to abate this nuisance as far as it may be practicable to do so without detriment to that species of security of property which dogs afford Be it enacted by His Excellency the Governor of New South Wales with the advice of the Legislative Council That from and after the first day of June next every dog which shall be found loose in any part of the streets of the said towns shall be liable to be immediately killed or destroyed unless such a dog have a collar round its neck with the name and address of its owner legibly engraven

> thereon and all persons are hereby authorized and all Constable and Peace Officers are hereby specially ordered and required to seize kill and destroy every dog so found loose without a collar accordingly (Public General Statutes of New South Wales 1861:217–20).

The Act provided for a reward of two shillings and sixpence to constables and peace officers who killed unregistered dogs. Public administrators tried to control the number of dogs by a system of escalating registration fees: the fee for one dog was 1 shilling per year, for two dogs the fee was 5 shillings, for three dogs it was 15 shillings, and a fee of 10 shillings was charged for each dog additional to three. Penalties ranged from 25 shillings to five pounds. The Act sought to identify the owner of the dog through the behaviour of the dog:

> And be it further enacted That in order to ascertain the owner or proprietor of a dog so as to make him or her liable for the forfeitures and penalties imposed by this Act in respect to such dog it shall be sufficient to prove that such dog usually resorts to and takes shelter in the house or premises of such alleged owner or proprietor (Public General Statutes of New South Wales 1861:217–20).

The Act proved useful and was extended by subsequent legislation. The heavy registration fees for multiple dogs were modified in 1835 to one shilling per year for the first dog, two shillings for the second, two shillings and sixpence for the third and five shillings for each dog thereafter (Public General Statutes of New South Wales 1861:624). In 1875 the registration fee was set at two shillings and sixpence per year for each dog, regardless of the number owned by a particular person (Oliver 1879:823–4).

It may be noted at this stage that the legislators of the day depicted dogs as 'infesting' towns and had noted the way dogs 'resorted' to their keepers. This naturalistic distinction (which is the basis of the arguments in preceding chapters), became lost as the Act proceeded through amendments to become known as the Dog and Goat Act 1898. This Act also confirmed 29 Victoria No. 17 of 7 April 1866[49] which prohibited the use of dogs or goats for draught purposes.

The Dog and Goat Act applied in the Australian Capital Territory when the territory was formed in 1911. Since the Act is the basis for contemporary legislation in the Australian Capital Territory on dogs, selected provisions of the Act are dealt with in further detail.

Under the Act, all dogs in excess of six months of age were required to be registered annually. The local constables were fined if their efforts to have dogs registered lacked zeal, and if they did not endeavour to destroy unregistered dogs. Onus of proof of registration lay with the defendant in any action. Section 12 (2) summarized the situation:

> Every dog, whether registered or not, found at large in any part of any city, town or police district without being under the immediate custody, protection, or control of some competent person, may, unless such dog has a collar around its neck with the name and address of its owner legibly engraven thereon, and if a mastiff or a bull dog or a mongrel of either of the same has in addition to such collar a muzzle securely fixed upon the mouth of such dog so as to prevent it from biting or injuring any person or property, be immediately killed or destroyed, and all

[49]This Act predates the formation of the Royal Society for the Prevention of Cruelty to Animals in Australia, the first unit being formed in Melbourne in 1871 (Wirth 1992).

> persons are hereby authorized and all constables especially ordered to seize, kill, and destroy every such dog (McKay 1959:898).

The specification of muzzling for mastiffs recalls similar early municipal attempts in England, mentioned in Chapter 2.

Unregistered dogs could be seized by any person and handed to a Justice of the Peace who could penalize the owner and/or authorize that the dog be destroyed if it was not claimed within 24 hours of its seizure being notified. Indeed a reward of two shillings and sixpence was payable to anyone who presented the tail of an unregistered dog to a magistrate or a Justice of the Peace (McKay 1959:894–904).

Under the Act, masters of servants were responsible for the servants' dogs; a constable who 'wilfully or maliciously kills or destroys' a dog which is not at large was required to pay a fine to the owner of the dog; and a claimant need not prove 'previous mischievous propensity' in the dog before proceeding against its owner (McKay 1959:894–904).

Australian Capital Territory Dog Ordinances

The Seat of Government Acceptance Act 1909–1955 came into effect on 22 January 1910 and created the seat[50] of the newly formed Commonwealth Government, when New South Wales surrendered territory which was accepted by the Commonwealth. Under this Act, all laws in force before proclamation of the Act, with some exceptions not relevant here, remained in force until other provisions could be made.

It was not until 1 April 1926 that the Dog and Goat Act 1898 of New South Wales was replaced by the Dog Registration Ordinance (Laws of the Australian Capital Territory 1911–1959, 1960:541–8). The provisions of the Ordinance 1926–1953 differed from the Act in several ways, including:

- a registrar of dogs was appointed;
- inspectors were appointed;
- a dog was required to be registered from the age of three months, and identified by a registration disc attached to its collar. The fee for working dogs was twice that for pet dogs;
- all dogs at large could be seized by an inspector, or by a member of the public and handed in to an inspector, and would be held for seven days before destruction. Owners of registered dogs

[50] In 1938 the seat became known as the Australian Capital Territory (Laws of the Australian Capital Territory 1911–1959 1960:837–43).

would be notified and given four days to respond to the notification. Penalties were the cost of upkeep for the dog plus registration fee if applicable;

- the keeper of a dog which rushed at or attacked a person or domestic animal was liable for a fine of five pounds plus the damage caused by the dog, but not if the person or animal had no lawful excuse to be on the premises;

- a dog which attacked any person when not in its premises could be destroyed forthwith unless it was under the control of a person. In the latter case, a Court could order destruction of the dog and police could enter premises to carry out that Court order; and

- diseased, injured or dangerous dogs could be destroyed humanely if in the opinion of an inspector or the police such action was necessary.

Of incidental interest is that the dog was declared to be stock under the Stock Diseases Ordinance 1933–1939 in 1938 (Laws of the Australian Capital Territory 1911–1959 1960:645) and, although rabies was not declared as a notifiable disease under the Public Health (Infectious and Notifiable Diseases) Regulations (Laws of the Australian Capital Territory 1911–1959, 1960:531), it was declared a disease of stock in 1951 (Laws of the Australian Capital Territory 1911–1959, 1960:796). There seems to be

no parallel with the situation posited by Ritvo (1987:192) that rabies was seized upon to strengthen the position of progressives in the public health discourse (see Chapter 2). However, as will be pointed out later, the threat of rabies still figures in present day discourse on urban animal management.

ACT Government policy concerning dogs

The Australian Capital Territory (ACT) became self-governing from 10 May 1989, Self-Government Day being declared as 11 May 1989 (Australian Capital Territory, Government of, 1991a:Table 1:20). Prior to this date, various departments of the Commonwealth Government were initially responsible for the administration of dog registration legislation and, later, for dog control. The ACT Government thus inherited the responsibility for deciding and administering public policy on dogs.

Dog Control Act

Hogwood and Gunn (1986:16) point out that a specific Act may be regarded as formal authorization, without necessarily leading to an outcome, but the ACT Legislative Assembly, whose members have 'both municipal and State responsibilities' (Szuty 1993:955), does tend to be under the close scrutiny of the ACT media and the public generally. Therefore it is considered appropriate to describe the Dog Control Act 1975 as stating policy on dogs, and also as a document which reflects the public policy process with respect to dogs.

The Dog Control Act 1975 is the principal act in the ACT relating to the keeping and control of dogs. Its history begins with the Dog Registration Ordinance of 1926, through the Dog Registration Ordinance of 1967, the Dog Control Ordinance 1975 and the Dog Control Ordinance 1976. When the ACT became self-governing, the Self-Government (Citation of Laws) Act 1989 altered the citation of most Ordinances so that after Self-Government Day they, including the Dog Control Ordinance, were cited as Acts (Australian Capital Territory, Government of, 1991a).

The history of the Dog Control Act 1975 includes:

- the repeal of nine dog registration ordinances;
- eight amendments of dog control ordinances;
- three amendments (to 1 July 1993) of the Dog Control Act;
- adjustment of Dog Control Ordinances in line with the Sex Discrimination (Miscellaneous Amendments) Ordinance 1986 and the Self-Government (Consequential Amendments) Ordinance 1989; and
- adjustment of the Dog Control Act in line with the Rates and Land Rent (Relief) (Amendment) Act 1991. (Australian Capital Territory, Government of, 1991a, 1991b, 1992b, 1993).

The history of continued amendments of the Dog Control Act 1975 indicates a dynamic public policy process at work, particularly since

amendments may involve the addition or amendment of more than one section. Amendments to the Act require a representative procedure in the ACT Legislative Assembly, with tabling and public debate of Bills to amend existing Acts. Thus, the public policy process in the ACT can be both dynamic and pluralistic.

The Dog Control Unit of the ACT Department of Land, Environment and Planning (now Department of Urban services) is the location of the Registrar of Dogs. The Unit used an education program entitled 'Your dog your responsibility' to interpret the Act for public consumption (Australian and New Zealand Federation of Animal Societies 1992) and summarized the Act in a leaflet for free distribution to the public (Australian Capital Territory, Government of, ACT Parks and Conservation Service c1993). The responsible dog owner is advised to avoid official censure and possible financial penalty (including on–the–spot fines) by:

- taking good care of the pet dog;
- always securing the dog in the backyard;
- registering the dog;
- maintaining control of the dog in areas designated as 'off leash',
- restraining the dog by a leash in other areas; and
- ensuring that the dog does not become a public nuisance through barking or howling.

Registration is described as being in the best interests of the dog. The leaflet provides information on areas where dogs may be exercised and allowed to swim, and on areas in which dogs are prohibited. The public is advised to report harassment or attack by a dog. The leaflet has two cartoons which present the 'problem dog' as willful, while a third cartoon presents the approved dog as playful and owner-oriented. Registration fees may be waived or reduced for an owner who has a guide or hearing dog, is member of a dog club, or has a dog trained in obedience. More detailed requirements are described for the keeping of more than three dogs. Although not mentioned in the leaflet, reduced registration fees apply to dogs which have been 'de-sexed'.

Animal Nuisance Control Act

In addition to the Dog Control Act 1975, the ACT Government is responsible for the Animal Nuisance Control Act 1975. This Act refers to a range of animals but is administered by the Registrar of Dogs (appointed under the Dog Control Act 1975), who is the only person entitled under the Act to apply for a Court order to control an animal nuisance. This Act began as the Animal Nuisance Control Ordinance 1975, and appears to have been amended only to incorporate changes required under the following ordinances: Court of Petty Sessions (Civil Jurisdiction) (Amendment) Ordinance 1984; Magistrates Court Ordinance 1985; Sex Discrimination (Miscellaneous Amendments) Ordinance 1986; and Magistrates Court

(Amendment) Ordinance (No. 3) 1986. At self government the Ordinance became an Act (Australian Capital Territory 1991c).

It would seem that this Act is not illustrative of a dynamic policy process, but can be regarded as formal authorization of public policy on relevant disputes. This comment is borne out by the existing *administrative* policy (P. Revill pers. comm. 1993) that Court orders not be sought until the parties in the dispute have taken steps to resolve the dispute by other means. For example, disputants are expected to resort to the Conflict Resolution Service. Thus, in the policy sense, the Act may be defined as a 'decision of government', while the administrative policy may be seen as a 'desired state of affairs', using Hogwood and Gunn's approach, and their comment on the difficulty of distinguishing policy from administration is substantiated (Hogwood and Gunn 1986:14-5, 21).

Animal Welfare Act

The Animal Welfare Act 1992 is the statement of ACT Government policy in regard to the welfare of animals, which is defined to include animal health and safety issues. However there is differentiation between domestic animals and wildlife, and feral animals or pests. The latter group can be poisoned under the Act. The Act establishes the Animal Welfare Advisory Committee (AWAC) which has the following functions:

- to advise the Minister about animal welfare legislation;
- to participate in the development of approved codes of practice;

- to provide advice to other Territory authorities, and to community bodies, about programs for the improvement of community awareness about animal welfare;
- to advise the Minister about any matter relating to animal welfare;
- to report annually to the Minister on the activities of the Committee (Australian Capital Territory 1992a:51).

Relevant codes of practice referred to in the Act include:

- the management and control of companion animals;
- the management of companion animals in pounds and shelters;
- the use of animals from pounds; and
- the development of new breeds of companion animals (Australian Capital Territory 1992a:11).

The Animal Welfare Act is linked with subsection 35 (2) of the Dog Control Act 1975 and repeals the Prevention of Cruelty to Animals Act 1959 and its amendments of 1980, 1986 and 1988.

'No Front Fence' policy

The No Front Fence Policy is an administrative policy dating from before ACT self government. In the previous section of this discussion, it was shown that the Dog Control, Animal Nuisance and Animal Welfare Acts

established parameters of involvement in decision making by the ACT Government. Clearly, decision making is further constrained by political, historical and economic factors in the wider environment. Of these factors, of particular note in the present debate is the published policy regarding detached and semi-detached dwellings in Canberra which '... does not permit structures, particularly fences, in front of the building line. This is a long standing policy which had its origins in the early development of the city based on the 1918 Walter Burley Griffin plan.' (National Capital Development Commission 1984:2). Early planners interpreted Walter Burley Griffin's plan as one of a garden city in which enclosure of property would be softened by a No Front Fence Policy, the place of fences being taken by hedges.

There was persistent infringement of this policy by residents, who erected fence structures to, among other things, provide security for young children and animals within the property, and to discourage trespass by animals onto the property. The No Front Fence Policy was reconsidered in 1982, and reaffirmed with the proviso that a small area in front of the building line could be enclosed as a courtyard constructed of similar materials to the main building, and where a hedge was established, insertion of a gate at the front boundary could be approved (National Capital Development Commission, 1984:9). It was argued that the courtyard would serve to contain children or animals safely.

Discussion

The foregoing sections show quite clearly that our association with the dog has a long prehistory and a history of being very close, and there is arguably a biological interdependence as well. A naturalistic perspective has been used in this chapter to suggest that the content of present day public policies and that the way in which they are administered in relation to urban dogs is a product of the British and colonial context in which they arose. This context included extremes of objective and subjective relationships with dogs, and the baggage of a normative perspective related to the notion of dominion over animals, but at least was based on an appreciation of the cooperating–to–compete aspects of the relationship.

It has been suggested here that the pioneering context of early settlement illuminated the beneficial aspects of an association with dogs for the survival of the colony, but this association quite quickly came to be understood as having two edges — the animal natures of uncontrolled dogs also threatened the livelihood and public safety of colonists. Public policy cast dog control as a public safety issue to be administered by law and order agencies, the officers of which were held financially accountable for carrying out policies of registration. The context included a family model of governmentality, strongly laced with convictism and class boundaries. The dog was viewed as both an instrument of the owner, and as a symbol of social responsibility defined by class status. Legislation moved from the abatement of nuisance from dogs without infringing on their practical value

to the colony, to institutions which identified dogs to their owners and restricted the movement of the dogs. The dog at large came to be seen as a deliberate act of an irresponsible owner who 'allowed [it] to go loose at all hours' (Public General Statutes of New South Wales 1861:217–20).

The legislation concerning dogs in New South Wales continued virtually unamended for several decades until, in the ACT in 1926, responsibility shifted from law and order agencies to a bureaucratic institution, the Registrar of Dogs. However, the essential spirit of the legislation (registration and, if necessary, impounding of dogs; penalization of offending owners) remained unchanged. Legislation could be seen as very much locked within the Hobbesian social contract and 'family' husbandry of society. Even though the Dog Control (Amendment) Act of 1991 allows for the declaration of exercise areas and prescribes in general terms the conditions under which dogs for licensed breeding should be kept, the discourse is one of control of the dog.

The Animal Welfare Act 1992 markedly extends public policy in the ACT into animal stewardship, and institutionalizes the plurality of public interests by establishing an advisory committee. However, public policy on dogs in the ACT remains bound by the concepts of social responsibility for and stewardship of the dog as a privately owned object. Since these concepts ignored the biological dimension created by co–evolution of human beings and dogs, the basis of policy is virtually unreal, even though its effects can be very real. The attitude which assumes human domination

of nature, in this case of the dog, allows government to be cast as a 'system of watchful control' (Foucault 1979:16) of the dog owner rather than a full player in what is clearly a community issue. Dog governmentality has not made the transition to the 'disposition of things, arranged so as to lead to a convenient end' (Foucault 1979:11).

While this section provided a snapshot of systems for controlling natural features in the human landscape, the previous sections have indicated the complexities cased by the simple fact that human beings also are animals and that they too evolved within a complex which itself evolved. The biological dimension of the human–canid relationship was understood by early colonists in Australia who, in establishing bases in a new environment, knew that public policy was about the survival of particular human groups and that dogs were a dynamic element to be considered in that context. With technological development and urbanization, this understanding has become vague. The dog has been marginalized as a nuisance to orderly urban development without thought as to what that marginalization means in terms of human well being. In effect dog keeping has been marginalized even though the undertaking has clear economic and social meaning in the community. Indeed, in modern urban Australia (compared with the situation in less developed countries) the discourse of control has reached the point where the dog can survive only within human protection. Most dogs which are kept are sterile and written out of the conservative effects of natural selection, and in public policy

terms the animal is appreciated only for its economic utility as a pet or an aide.

Yet, in light of the discussion so far, it does not seem feasible to ignore the weight of evolutionary history in the human–canid relationship. The relationship clearly has a biological dimension which is at base the reason for the complexity of our association with dogs, which will be discussed next. Chapter 4 is an effort to test for evidence that the human–canid relationship is an evolved complex, the understanding of which can be assisted by a naturalistic perspective. The idea of a 'secret power of pets' used by the editors of *New Scientist* (see Vines 1993:30–4) to hint at the complexity of the relationship has not been embraced, since the mention of 'pets' immediately predicates the premise anthropocentrically. Rather, following in the footsteps of Adam Smith, the idea of an 'invisible paw' is used to retain the sense of selection pressures at work, naturally.

Chapter 4

The invisible paw: human–canid relations

Purpose

Chapters 2 and 3 developed the hypothesis that human beings and dogs evolved together as an interdependent complex which can be viewed as a unit in spite of a natural tendency towards othering. It was argued that the relationship had evolved biologically before the presumed cultural event of animal domestication by human beings occurred. If dog keeping were primarily cultural and related to relatively recent human behaviour, then the discourse of urban dog control alone may be an appropriate administrative intervention. If, however, the biological dimension is accepted, the discourse of control is not appropriate as a sole basis for public policy about urban dogs. Its application may repress human needs and so not be in the interests of human well being. A naturalistic perspective is as valid a model as that of divinely permitted human dominion over animals that have been created by a deity. A naturalistic perspective is also as valid as the model of creation of animals by a deliberate process of domestication by human beings, the animals being created as instruments of human purpose.

The relationship between people and dogs often is subjective. The discourse of control regards the relationship objectively, with the dog the object of ownership by a human being. The relationship between the

controllers and the 'dog owner' tends to be adversarial and implementers of public policy may thus be isolated from a section of the community. The term, 'irresponsible pet owner', becomes a basis for othering constituents. This is unfortunate, because the term itself does not bear close scrutiny. A naturalistic perspective, on the other hand, helps foster an appreciation of both urban animals as subjects of public policy. Ideally the situation could be stated more practically in public policy terms as 'our dog, our responsibility'.

The purpose of this chapter is to offer empirical evidence of a biological connection between people and dogs — the invisible paw — by referring to research and other observations that illuminate some complexities of the relationship. The hypothesis of the thesis is that we are an urban animal that has co–evolved in an association with another urban animal, the dog. If co–evolution occurred (and is still occurring) then one might expect the association to be complex because of the inter–dependency of the two animals.

The chapter therefore explores the complexity of the human–canid relationship. In doing so, the groundwork is laid for Chapter 5, in which the importance for public policy of addressing the various issues that have been raised in the thesis is enlarged upon, and examples are given for using a naturalistic perspective in making public policy concerning urban dogs. This chapter will have achieved its purpose if it shows that the idea of an 'invisible paw' is no more outrageous than Adam Smith's theory of an

'invisible hand' in human interactions, mentioned in Chapter 2. Smith's idea continues to underpin economic theory. It may be remembered that Smith's theory was naturalistic and did not resort to religious explanations for human behaviour. In fact, this was Smith's strength just as it was Darwin's strength about two hundred years later.

The invisible paw is put forward as an alternative perspective to creationist models of human dominion. As mentioned in the previous chapter, in October 1993 the *New Scientist* published a special supplement called the 'secret power of pets'. The author of this supplement (Vines 1993: 30–4) reviewed beneficial effects that pet keeping appeared to have for human health and well being. These effects are dealt with in this chapter. She also noted the difficulty of quantifying these effects. This chapter will make it clear that the editors of *New Scientist* did not take the concept far enough, since by using the term 'pets', they presupposed an economic and rational relationship, allowing, say, in public policy terms, for ownership, exchange, regulation and substitution. On the contrary, this thesis argues for an evolved, involuntary and interdependent relationship in which there is a fundamentally non–negotiable need for companionship with dogs by at least a proportion of any community.

In this chapter, theory and empirical evidence is cited from psychology, physiology and animal behaviour, anecdotes and field studies in Jaipur, India, and observations in Port Moresby in Papua New Guinea. The argument is developed that the human–canid relationship transcends

relationships between human beings and owned objects. It is therefore considered that the basic attitude in public policy making should be to foster access to dog keeping for all who wish to do so, even though that access may be, for practical reasons, sharing the dog with others in an institutional situation.

Previous chapters have taken a broad philosophical approach in order to challenge the dominant discourse of control in policy making on dog keeping. Within that discourse the dog is an object with value derived from its ownership by human beings. The discourse was admitted as powerful but was argued to be an over simplification of reality — virtual unreality. As an alternative, a base was developed for a naturalistic perspective which viewed both human beings and dogs as urban animals. The relationship between human beings and other animals can be viewed as extending from extremely dispassionate exploitation of dogs for human consumption to another extreme, where dogs may serve as totems for people or as foci of adoration. In this thesis, however, both space limitations and its focus on public policy dictate that the bulk of the discussion be directed to the dog as an associate of people in the urban situation.

Introduction

Policy makers who seek to implement equitable and effective policies need to be aware that many private citizens regard the dog as a companion, not as an object. The legislative approach to urban animal management has tended toward objectifying the dog, however. Chapter 2 suggested a foundation for

how a discourse of control came to be conceived and developed in relation to *others* which have included the evolving dog. The discussion in that chapter was in reference to western thinking in particular, though eastern cultures can adopt this discourse also[51]. Chapter 3 described a complex, evolved, organic relationship between people and dogs but showed that there remains an innate tendency to reduce this complexity in public policy to one of simple domination of an-*other* species or of an object whose only value is derived through human ownership. This public policy package is often called *responsible pet ownership*. This is a normative concept which fails to address the reality of the complexity of the human–canid relationship.

To repeat, the naturalistic perspective adopted in this thesis regards human beings and dogs as urban animals. Previous chapters also argued that public policy making is a survival technique of the human species. These bald statements perhaps raise the specter of excesses of social Darwinism, eugenics and sociobiology whereby principles of biology were simply extended as explanations of human behaviour. It may seem dangerously radical to import a naturalist's ideas into public administration and policy making. However, it makes sense to do so when dealing with policy on animals. At least one of the parties to any discussion on dog keeping is an

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[51] The Peoples Republic of China may be an extreme example: municipal authorities reportedly have proposed a registration fee approximating the average annual salary of citizens, in an attempt to reduce dog numbers, dog attacks and fouling of the streets (*The Canberra Times* 16 January 1995:15).

animal, and a naturalistic perspective therefore is a logically necessary part of policy making about animals. The thesis does not argue for a naturalistic perspective to be the sole world view of makers of policy on urban dogs. A naturalistic perspective is argued to be complementary to existing views on management of the urban dog. As such it may augment the discourse of control used by public administrators and hopefully can temper their attitudes to dog keeping in the urban situation. A naturalistic perspective is offered as an example of what Mattei Dogan and Robert Pahre (1990) called 'creative marginality' to describe prospecting in the margins of various disciplines, including biology, by social scientists.

Some contemporary social theorists do favour an understanding of public policy and administration in adaptive biological terms. They have applied a naturalistic perspective to public policy and administration. The views of a few of these theorists are now discussed, to begin moving the discussion on a naturalistic perspective into the domain of public policy and administration.

A naturalistic perspective remains contentious, partly because E.O. Wilson's (1975) initial stance on sociobiology was as a virtual alternative to the social sciences. His proposal attracted heated criticism. Sociobiology was an encompassing view which was attacked as simplistic reductionism. For example, the philosopher Mary Midgley (1978b:147–69) objected to the attempt to 'unscrew the outside from the inside of the teapot'. The Science as Ideology Group of the British Society for Social Responsibility warned in

Science in May 1976 that sociobiology was racist, sexist, classist, imperialist and authoritarian (Ferry 1984:219–25). Samuel Barnett (1990:119–32) attacked biologically based attempts to reduce the mystery of human nature to simple mechanical, electronic, genetic, territorial or mendacious models, and reiterated the place of the social sciences in dealing with the nature of humanity[52].

'Reputable' sociobiologists (Lewin 1977, reprinted in Ferry 1984:226–31) did not subscribe to such a simple view of human beings. Wilson himself withdrew to a less confronting position (Wilson 1977, reprinted in Ferry 1984:212–18), agreeing that human behaviour should not be seen as determined biologically, but that sociobiology could be an additional tool for use in the social sciences. He considered that sociobiology could articulate behaviourist and social theory.

Wilson spoke at Cambridge in 1982. His visit created considerable controversy. When the smoke of argumentative battle had cleared, however, the social theorist W.G. Runciman (1989), for one, appreciated aspects of Wilson's argument. Runciman found he had grasped the power of the concept of biological evolution to explain indirectly some aspects of the structure and culture of human society, provided that those practices that were selected through inter and intra–societal competition were correctly

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[52] The nature of the urban human–canid relationship similarly has been reduced by public policy makers, but in the opposite direction, since they seem to assume that urban dogs and cats can read the regulations which policy makers promulgate.

identified (Runciman 1989:12–28). Runciman was also intrigued by Dawkins' concept of memes to explain the heritability of social practices. Runciman's views thus can be seen to support the attempts of this thesis to import biologically biased arguments to the social domain.

A naturalistic perspective regards urban society as a kind of organism shaped by a complex of interacting human, animal and plant components. Empirical analysis has limited usefulness in explaining this complexity since generally the assumptions in the social sciences are anthropocentric. Hugh Emy (1989:188–204) suggested that political theory based on scientific reasoning is unable to deal with the complexity of reality which, on the other hand, post empirical thought can appreciate. He suggested that the disposition of political study into empirical and normative streams is outmoded. The cultural view, he argued, appreciated 'the continuing struggle to advance and maintain more satisfactory forms of human community' (Emy 1989:189). This is the language of natural selection. However, he noted that empiricism should be retained to ensure disciplined development of the view. Emy's view and vocabulary appreciates the organic nature of human society. His view is commensurate with the naturalistic perspective promoted in this thesis.

Emy's paper did not, however, attract much interest (Emy pers. comm. 1994). Perhaps the lack of interest bears out the philosopher James Rachel's (1991) proposition that the implications of the challenge to anthropocentric rationality which the theory of natural selection poses have

been, as yet, barely felt. This thesis challenges anthropocentricity, and argues that a naturalistic perspective does have the potential to assist policy makers, even in areas broader than urban animal management. For example, Ranson and Stewart (1989:5–24) argued that public administration could be viewed in naturalistic terms, as an adaptive structure, because, they argued, public administration may be conceived as supporting and developing the collective life of a whole community or society. This is precisely in line with the thrust of this thesis. Public administration is, they suggested, often understood in negative terms — that is, as that field of endeavour which cannot be described as being in the private sector. Public administrators have tended to address the actions of urban dogs in public places, and not address them as a part of the biological continuity which is the urban situation. Ranson and Stewart pointed out that since the public is a whole, it is incorrect to view public administration as divisible. Among the important functions in the public domain is the task of deciding collective rules and purpose, thus resolving collective conflict into collective choice. However, since in the public domain the citizen exists as both an individual and as a member of a collective, the task is achieved, at least in theory, by representative government deciding for the collective but being accountable to the individual. Often the process requires extensive consultation with, and participation of, the stake holders. The task of public administration is to 'turn politics into government and discourse into action' (Ranson and Stewart 1989:20). In overtly biological terms, public administration can thus be regarded as the practical expression of survival policies of the human

grouping. The issue of urban dogs cannot then be reduced to an issue of individual ownership of an object, since it is being argued here that the urban dog is necessary for, and therefore symptomatic of, the well being of the human collective.

On a rather more pragmatic level of discussion, laws need to reflect recognized norms if they are to be practically capable of enforcement (Maier 1987:4) and, as will be shown in the following sections, for a large part of the community it is normal to regard urban dogs subjectively. Laws based only on the dog as an owned object will thus be difficult to administer.

Adaptive political and public administrative processes suggested by Runciman, Emy, Maier, Ranson and Stewart would seem able to handle the human–canid relationship in all its evolved complexity, provided that these processes take place within systems which allow choice and flexibility. For example, as put forward in previous chapters, part of what defines a human being is an association with the dog. That is a cornerstone of the arguments mounted in this thesis. Without the dog, human beings would be different in some way: perhaps our Neanderthal cousins would have pre–empted our existence early in our history, just as we did, late in theirs.

But, as Emy has noted above, there is a need to base such speculation on some empirical foundation, to ensure the argument is disciplined. The following section provides evidence that the human–canid

relationship is extremely complex and real, and that a convergence of needs between people and dogs has evolved.

Analytical empiricism: revisiting Descartes

In only the past two decades or so, there has been a focussed attempt, especially by the Delta Society in the United States, to place the study of the human–animal relationship on an empirical footing, in an attempt to prove the relationship through quantification. That is, to work from the particular to the general. Most research of which this writer is aware has been carried on in developed countries and refers in particular to the urban dog as a companion of people.

The Delta Society has convened several conferences on the subject of human–animal relationships. These led to the establishment in 1987 of an internationally refereed academic journal, entitled *Anthrozoös*. While the journal has been utilized by many researchers, its foundation editor, Andrew Rowan, has had to defend the journal against criticism that the research has failed to provide unequivocal statements on the human–animal relationship. Rowan pointed out (1994a:2–3; 1994b:85–9) that the relationships are so complex that unequivocal evidence is difficult to obtain, partly because of lack of funds for research. He nonetheless regards existing evidence as 'solid':

> In sum, there is solid evidence that animal contact has significant health benefits and that it positively influences transient physiological states, morale, and feelings of self worth. The impact may be mediated directly, or by influencing

> psychosocial or risk behaviors. Long term effects of animal companionship and interaction include an influence on the attitudes and behaviors of young children. Presumably this influence has value for the future (Rowan 1994b:88).

Some experimental support for Rowan's comment is discussed below in relation to psychological and physiological experimental data, and then anecdotal evidence is considered. It may be noted here that the tendency of researchers to refer to 'pets' rather than to specify the animal companion also makes for equivocation when their results are discussed. The concept of pets underlines the Cartesian attitudes of the researchers, who tend to see the pet instrumentally.

Psychological perspective

Psychologists and others have been at the forefront of attempts to quantify aspects of the human–animal relationship. Francis Galton commented at length on the psychological bond between human beings and dogs, as evidenced by the ability of the two species to communicate well, compared with most other species. He pointed out our special relationship with dogs rather quaintly: 'Who, for instance, ever succeeded in frowning away a mosquito, or in pacifying an angry wasp by a smile?' (Galton 1907:187–8). While this writer has never pacified an angry dog by a smile, Galton's point is nonetheless clear — dogs play a special part in human–animal relationships; there is communication. This was exactly the point of the famous behavioural scientist, Ivan Pavlov, who recognized that human beings could elicit a social reflex in dogs because of their long historical association. Pavlov's main concern, admittedly, was to warn that this reflex

could confound results of behavioural experiments (Lynch and McCarthy (1969:389–98), a particularly anthropocentric and Cartesian viewpoint.

The dog is well known as a favoured companion of people. As mentioned previously, Konrad Lorenz (1952, 1959) applied ethological theory to the human–canid relationship, and recognized that the relationship dated from prehistoric times. His perspective was largely anthropocentric however, with the dog as a useful but 'a submissive and servile friend' within a sort of covenant (Lorenz 1952:116). According to one of his students, Wolfgang Schleidt (1990), Lorenz' reputation as an ethologist became established from his development of the idea of the *kumpan* [translated as 'companion'] in birds. The *kumpan* was an object which elicited a specific Innate Releasing Mechanism in the subject (the bird). The mechanism caused the release of specific behaviour between the pair, which could be infant/parent, mate/mate and so on, and required an initial imprinting. The possible role of the dog in releasing nuturing behaviour in people is discussed later in this chapter. According to Schleidt (1990), Tinbergen criticized the idea as bordering on the mystical, and Lorenz did not pursue it: he concentrated instead on the mechanism for imprinting. To help understand the process of human development, Schleidt revisited the *kumpan* idea and concluded that types of *kumpan* could relate to different stages in the human life cycle and could explain relationships with companion animals.

Another researcher of the human–animal relationship, the ethologist and veterinarian Michael Fox (1975:37–53), drew attention to the parallel development of children and dogs, particularly in relation to socialization, though he also considered that the animal model had finite value as an aid to understanding human development.

An association with dogs may be important in the development of the human personality and access to them may become increasingly important as public amenities are squeezed by economic or spatial exigencies. Boris Levinson urged other psychologists and behavioural scientists to take seriously 'the influence that the possession of animal companions has on human personality' (Levinson 1978:1037). Levinson used pets in psychotherapy of human beings, particularly of children, and he suggested that a pet had potential for use as a 'mental hygiene adjunct' (Levinson 1975a:8–18). He forecast that, by the year 2000, pet ownership would be 'a very important safety valve in a sick [urban] society' (Levinson 1975b:159) and thus saw pet ownership as a trait to aid people to adapt to urbanization. Levinson hypothesized that:

> the personality development of an individual who has an animal companion or is surrounded by animals, if these animals play a significant role in his life, will be somewhat different from that of an individual who does not posses animals. The ownership of a pet may aid the development of adaptive personality traits ... (Levinson 1978:1032).

Because of the lack of psychological data in the study of human–animal relationships, Levinson based his argument partly on anthropological and sociological data, with a focus on human development and on the pet

animal. Levinson had an instrumental view of animals and forecast that pet animals would be under increasing pressure to meet a variety of human needs.[53]

Levinson's work stimulated other research into the human–animal relationship, with emphasis more lately being placed on defining key concepts and on appropriate methods that yield comparable results. While this research has illuminated many interesting points in the human–animal relationship, findings have often been ambiguous or have conflicted with other results. Lago et al. (1988:240–254) summarized progress on developing empirical measures of attitudes to pets in general or to a particular pet, which use established methods and approaches from psychology, and permitted statistical testing of conclusions. They noted that the various scales in use determine only some dimensions of attitudes to pets. They acknowledged that these attitudes are complex and difficult to assess in depth. Nonetheless, they considered the scales were a step towards collecting comparable research data.

However, despite Levinson's attention, the area of human–animal relations requires much more research. Despite the obviously affectionate relationship between children and their pet animals, the psychologists Aline

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[53] In describing the pet in relation to human needs, in economic terms, Levinson does not address the issue of why particular pets meet those needs. There does seem to be a deep-seated need for pet dogs, at least, in people. For example, in the People's Republic of China ownership of dogs as pets was effectively banned in 1949 but a recent relaxation of the ban has reportedly resulted in a remarkable surge in numbers kept (*AVA News* 1993:29) and the perceived need for control mechanisms such as high registration fees mentioned in a footnote above.

Kidd and Robert Kidd (1985:15–31) considered that the relationship had not been well researched, even though the relationship may have existed from prehistoric times. They conducted research in a group of 150 boys and 150 girls aged from three to thirteen years, selected to be representative of the children in the Greater San Francisco Bay area. Ninety per cent of the children came from families where pets were kept, and 99.3 per cent of the children expressed a desire to have a pet, 57 per cent of the children preferring to have a dog. The children did not consider the pet to be a slave or a scapegoat, nor did they express a desire to dominate the animal. The children regarded the pet, especially dogs, as playmates, indicating the children's subjective view of their relationship with the pet. There was no correlation found between the cost, source nor method of obtaining the pet and the length of time it was owned. Kidd and Kidd (1985:15–31) noted that the results might vary if the experiment was conducted in different populations of children. The access of children to the companionship of animals may have wider social implications. For example, Ascoine (1992:176–91) tested children in the fourth grade of schools in United States of America and found that their compassion for animals (not their ownership of pets *per se*) was correlated with their empathy for human beings.

The positive influence of animal companionship on the development of children has been shown through cost benefit anaysis. Bryant (1990:253–61) analyzed the benefits and costs of pet keeping to children in grades three to seven in a school in the United States. She interviewed 257 children, of

whom 213 had pets and 44 did not. Bryant found that the children considered the benefits of pet keeping to be mutuality, enduring affection, self-enhancing affection and exclusivity of relationship. Costs were regarded as distress from the death of the pet or rejection by it, dissatisfaction with the pet's needs, worry about the safety of the pet, 'getting into trouble' because of the pet, and distress at not being able to care for the needs of the pet.

In a study of children which sought to obtain data on their relationship with dogs, Filiatre et al. (1988:22–32) attempted to establish a child's attitudes to the pet dog in particular, and also recorded the behaviour of the dog. They filmed two groups of children: 45 children with 45 dogs and 24 children with 24 dogs. They found the child initiated the majority of interactions, most frequently through touching behaviour, and that the child's behaviour was influenced importantly by its age grouping. Children two to three years old showed an agonistic response, especially if the dog was small and young, but children three to four years old showed linking behaviour, hugging and appeasing the dog. Children four to five years old manipulated the dog as though it was an object. Filiatre et al. (1988:22–32) commented that these categories fitted categories of behaviour of children with their peers[54]. The dog's behaviour was most often sniffing, particularly of the ano-genital area of a strange child as though to 'log' its identity,

[54] At about the age of seven, children become aware of the differences between their own behaviour and capabilities and those of the pet, and adjust their activities accordingly (Kidd and Kidd 1987:142).

because the dog did not show such interest in children who were well known to it. If the child's behaviour was agonistic, the dog tended to retreat and in less than four per cent of interactions did the dog respond aggressively.

Kidd and Kidd (1989:903–10) conducted attitude tests of 900 'average' American citizens to assess their attachment to pets. They found that adults who had had pets as children were more attached than those who had not, women were more attached to their pets than were men, single people were more attached to their pets than non–single people, and childless couples were more attached to their pets than were couples who had children. Reasons given for not having a pet were essentially practical: allergies, cost, or housing restrictions.

Dogs are companions for people, especially for those who have grown up with dogs, but access to the dogs is influenced by other factors. Gage and Magnuson–Martinson (1988:232–39) surveyed, by mailed questionnaire, the attitudes of young married couples with one child towards their companion dog. They found that, although family history significantly influenced their attitudes, the strongest predictor of the young adults' attitudes was that of their spouse[55]. Pets, especially dogs, which provide companionship, are regarded as members of the human family. Albert and Bulcroft (1987) surveyed 320 pet owners and 116 non-pet owners and found

[55] This raises the thought that the sexual bottleneck (Dawkins 1989:259) which operates in biological reproduction also operates in cultural reproduction.

that pets are viewed as important family members particularly among single, divorced, widowed and remarried people, with dogs being the pet rated most highly. The survey was carried out by telephone in the city of Rhode Island, USA.

The presence of a dog with a person can facilitate interaction between the person and strangers. Robins et al. (1991:3–25) used participant observers to study the effect of a dog on interaction between unacquainted persons in a public park. They found that the dog facilitated interaction and the development of trusting relationships. Rossbach and Wilson (1992:40–51) tested the attitudes of a group of students by showing them photographs of a person with a dog, without a dog, and with only a bunch of flowers, They found that people pictured with a dog appeared more likeable than those without or with only flowers, and persons with a dog pictured outdoors appeared happier and less threatening that those without a dog. Hunt et al. (1992:245–56) reviewed and tested the usefulness of the dog in facilitating social interaction between people in public places and found that the presence of any pet used in the experiment, even unobtrusive ones such as a rabbit or turtle, facilitated social interaction. However while pets can facilitate interaction their presence may not be sufficient to correct behavioural pathologies in people. Katcher et al. (1989:175–80) in a

longitudinal study at a prison in the USA, found that pets provided recreation for prisoners but did not influence their anti-social behaviour[56].

The above discussion underlines the subjective relationship between people and pet animals, the widespread nature of the relationship in the communities researched, and so the need for public policy makers to take the 'subject' of the urban animal into account. The discourse of control tends however to isolate public policy from this dimension of urban animals in the community because of its adversarial effects and so, as Ranson and Stewart above noted, illuminates only the negative aspects of the relationship between the public administrator and the public.

Health and physiological perspective

As well as the subjective relationship between people and urban dogs which adds a political dimension to the public administration of policies pertaining to the urban dog, investigations have defined several beneficial socioeconomic effects of the urban dog within the community. For example, empirically based research has focussed on the physiological relationship between pets and people, particularly in relation to health and cardiovascular effects. Friedmann et al. (1993:115–34) provided a review of literature on this subject and reported their own observation that the presence of a dog was related to cardiovascular responses in people. They

[56] In NSW, prison staff reportedly considered that a young Beagle crossbred dog had been useful in the rehabilitation of suicidal prisoners in Long Bay Gaol, because it helped the prisoners salvage their sense of self-worth (*AVA News* April 1993:21).

found that the nature of the response depended upon the person's perception of animals.

James Serpell (1991:717–20), whose book *In the Company of Animals* has informed debate on animal rights, reviewed the literature on the effects of pet keeping on health and also conducted a 10 month prospective study of 71 persons who had recently acquired a dog or cat, and of 26 others who had not. He found a highly significant reduction in minor health problems (and improvement in psychological status) reported by those persons who had recently acquired a dog. Although new dog keepers tended to take exercise more often and the increased exercise benefited those who adopted it, especially if they were elderly, the reduction in minor health problems and improvement in psychological status was not attributable to increased exercise. Recent acquisition of a cat had a less marked beneficial effect on the subjects' health. Serpell was unable to clarify the mechanism whereby recent acquisition of a dog affected health status of the keepers.

The therapeutic effects of keeping a dog or cat has intrigued other researchers. W.P. Anderson of the Baker Medical Research Institute was initially skeptical when asked by the Director of the Institute, Sir Laurence Muir, to investigate reports in the popular press of health benefits associated with pet ownership (Anderson et al. 1992a:153). The reports were that human interaction with companion animals caused acute lowering of blood pressure and heart rate, and that pet ownership was positively correlated with survival of the person after discharge from a coronary care unit. The

reports which Anderson was asked to investigate were based on data derived from original data of Friedmann et al. (1980:307–12 [cited by Friedmann et al. 1983:461–65]). Anderson et al. (1992b:298–301) surveyed 5,741 people from 20 to 60 years of age who attended a free cardiovascular risk assessment clinic at the Baker Medical Research Institute in Melbourne, in a research project funded by the National Health and Medical Research Council. They compared pet ownership with major risk factors for cardiovascular disease. The pet owners constituted 13.6[57] per cent of the population surveyed and some kept more than one pet. Anderson et al. found that, although there was no significant difference between whether the pet owned was a dog or another animal, their results supported the hypothesis that pet ownership did have an ameliorating effect on cardiovascular disease. They concluded that a larger study was justified to see if pet ownership could legitimately be urged as a community health strategy.

Of course, dogs already are incorporated in health programs in specific ways. For example, dogs have been used for centuries to serve sightless people. The service was instituted widely only after World War I, according to the Royal Guide Dogs for the Blind Association (1971). Dogs may also be used to assist persons with other disabilities, such as hearing

[57] This level of pet ownership appears low, since other data (see Paxton 1994 for example) suggest a much greater proportion of urban Australians keep dogs and cats, not to mention other pet animals. There may thus be a skew in the above population: perhaps pet owners are less likely to consider free cardiovascular check-ups necessary.

impairment. In relation to people subject to seizures, Miller (1993:146–7), who was involved in the selection and training of assistance dogs, reported that some of the dogs could detect the onset of seizures before the victims themselves could.

There appears to be an innate desire in dogs to cooperate with people, as the writer observed in India. In Connaught Circle in New Delhi, the writer observed a dog shepherding its beggar associate (who could not walk but slid about on a piece of corrugated cardboard) across an extremely busy four or five lane road. The writer photographed the event from the footpath and paid the beggar a small amount of money when he finally slid to the safety of the footpath. A passerby was annoyed at this 'generosity', commenting that the beggar had lost the use of his legs in a drunken accident and so deserved his fate.

Although there is evidence that dependent people benefit from the presence of dogs, it is equivocal. Rosemary Hoffman (1991:195–205) found that aged persons in institutions in New Mexico benefited from residential mascots and from visiting pets brought by volunteers. However, Garrity et al. (1989:35–44) found that the relationship between health and pet ownership in the elderly is ambiguous, and Lago et al. (1989:25–34), who reported results of longitudinal studies conducted among the aged in rural communities in the USA, found there was no significant relationship between attitudes to pets and health outcomes. They concluded that the positive effects of pet keeping could better be understood as indirect, by

bolstering morale for example. They also found that the elderly tended to give away pets when they considered they were no longer able to keep them. Stephen Verderber's findings (1991:164–73) also demonstrated rational choice by elderly pet keepers. He surveyed 59 elderly persons living in either independent or congregate housing and found that they try to maintain an indirect passive yet sustained relationship with animals to replace the active and direct contact they had had with animals earlier in their lives. He concluded that increased efforts should be made to create supportive environments to facilitate elderly persons' interactions with pets and other animals.

Other people have argued for access to pets by the elderly in institutional situations. Judith Siegel (1993:157–67) interviewed a group of 938 elderly subjects every two months over a year and found that pets appeared to buffer the elderly against the impact of stressful events. She therefore considered it reasonable that legislation should prohibit discrimination against pet keeping in publicly assisted housing and that the elderly and others should be informed of their rights in this regard. She argued that volunteer organizations should be encouraged to give elderly people access to pets and that there should be care for pets when keepers are temporarily or permanently unable to provide the required care[58].

[58] The Pet Owners with AIDS/ARC Resources Services was established in New York City (*Anthrozoös* 1992:58) to enable AIDS/ARC sufferers to keep their pets.

There is also evidence of a subtle biological reaction in dogs and other animals to people. Lynch and McCarthy (1969:389–98) showed that the heart rate of a dog rose initially when first exposed to a person and then fell or rose when petted by the person, according to the dog's experience with that person. Their aim was to show the possible effects of the social milieu under which data were collected in human–animal studies. Horses may also react to the presence of a human in this way. Lynch et al. (1974:472–8) in a limited study showed that change in heart rate could be evoked in one of two horses subjected to a similar experiment.

Fox (1978a:233) referred to experiments using biotelemetry which demonstrated that a fall in heart rate of a dog occurred reliably following petting by a person if the dog was socialized to the person. The effect was reciprocated. Friedmann et al. (1983:461–65) noted that children's heart rates and blood pressures rose when they were required to read aloud. This effect was moderated by the presence of a friendly dog. They speculated that the dog caused children to view the experimental situation as less threatening and more friendly if the dog was present. They considered the experiment gave insights into the use of pets in psychotherapy. Jenkins (1986:21–2) repeated the experiment in the homes of twenty pet owners, all of whom had a high regard for their dogs, according to Pet Attitude Test scores. All owners showed a significantly lower blood pressure and heart rate while reading aloud and petting their companion animal.

People like to handle dogs and there are positive physiological effects which can be measured. Vormbrock and Grossberg (1988:509–17) selected 30 female and 30 male college students who rated either positive or neutral in their attitudes to dogs, and ascertained whether the effect on their blood pressure and heart rate of petting and talking to a dog was due to cognition, conditioning or tactual contact. Their findings were that the factor of touch was most important in mediating the interaction with the dog.

The results of investigations reported above in this section serve to inform policy makers that the relationship between people and animals, especially dogs, is complex and crosses species boundaries. There are ample grounds for the suggestion of an invisible paw at work, shaping though not determining people's behaviour. This complexity needs to be taken into account when framing policy, particularly as, as already stated above by Maier, it is important for the efficacy of laws that they reflect the norms of society.

Qualitative analysis

Other researchers have used the tools of social science to attempt to analyze qualitatively the relationship between people and their animal companions. This section seeks to report examples of structured but qualitative attempts to show that the relationship between people and their animal companions is complex and deep. Policy which does not address the effects of its implementation on private individuals can hardly be equitable nor effective (Ranson and Stewart 1989:5–24). Public policy makers who regard the

urban dog as solely an object ignore the implications of policy for private citizens who regard the dog as a companion.

The section does not review the many instances in western literature where the pet dog has been eulogized in prose and verse, but Serpell (1986) and Turner (1964) may be consulted for examples.

In 1992, two researchers in the social sciences, Maree MacCallum and Margie Beaumont, in association with the psychologist Hugh Mackay, explored attitudes in Australia to dog and cat ownership (MacCallum Research and Mackay 1992). They used non-directive group discussions to achieve qualitative results. Ten groups of men and ten groups of women participated in the discussions. Participants ranged in age from twenty years old to sixty-five and the discussions were held in rural and urban situations. All participants either owned dogs or cats or had done so in the past seven years. The study found that several participants had negative feelings towards dogs and cats, but these were not necessarily shared within a given household nor sufficiently powerful to prevent another dog or cat being kept. The researchers found[59] that:

- pet ownership transcends the rational;
- the pressures of contemporary life favour increased pet ownership;

[59] The researchers often grouped dogs and cats together as 'pets' for the sake of reporting.

- pets deliver intense therapeutic benefits;
- 'pet stories' are an abundant source of folklore, legends and stereotypes which amuse and deeply satisfy pet owners;
- pets play many different roles in the lives of their owners;
- pet ownership is pleasantly basic and simple;
- the trend towards superior pet care acknowledges the important roles of pets in contemporary life;
- sometimes pets become a nuisance; and
- dogs can be more emotionally accessible than cats.

Hugh Mackay commented that the apparent increasing importance of pet ownership was a sign of what he termed the 'Age of Anxiety', where Australians feel a loss of control, a sense of isolation and a loss of confidence in their own future and that of Australia (MacCallum Research and Mackay 1992:6–8). Thus, he considered pet ownership to be an adaptation to social change, as had Levinson (1978:1031–38).

The MacCallum Research and Mackay study provided a rich description of the complexity of the human–pet relationship. Its findings are in harmony with the quantitatively assessed results discussed above. The conclusions drawn by the researchers from the study are, however, not informed by other than an instrumental view of the pet, because its method relies on the keeper explaining the keeper's side of the relationship. Even if

the reasons for keeping a pet dog or cat in contemporary Australian society can be explained as being for rational ends, it does not explain why the dog or cat is the means to those ends.

The notion of a 'pet' has allowed a rather narrow view of the association between human beings and nature, since it stresses the human domination of the object, with two corollaries: the notions of obedience and dependency. Yi Fu Tuan (1984) expanded upon this theme. For example, Tuan argued that pet keeping in the past extended to plants (for example, espalier or bonsai plants), animals and human beings (for example, slaves, fools, and dwarfs). He argued that the human predilection for power, expressed as dominance and affection, is necessary for a vital and effective society. However, as society became more egalitarian, Tuan wrote, the keeping of pets applied less to the keeping of people than to animals.

Tuan's arguments may have some force when pathological expressions of dog keeping power are considered: for example, Russell (1990:277, 280) wrote of two wife abuse cases where the husband had forced the wife to have sexual intercourse with the family dog[60]. There seems no doubt that Tuan's arguments do apply to some pet keepers, but hardly to all. It is true that dog obedience schools, for example, stress the need to dominate the dog, but this generally is on the basis that the human keeper takes on the role of leader of the dog's pack and not on the basis that

[60] In one case, the wife expressed regret that the inoffensive family dog should be thus debased.

people have acquired a dog in order to have power over an animal or to use it to express their power over each other. It has already been noted above that children who have been surveyed do not appear to wish to dominate their pets. Tuan has too finely defined pet keeping and ignored far more pragmatic aspects of the relationship between people and pets. Nonetheless, Tuan's theme for his book — that human domination with its two corollaries of obedience and dependency is the basis of pet keeping — is also a point that is challenged in this thesis. The thesis argues that the concept of responsible pet ownership — with its corollaries of control and stewardship — is not by itself a sufficient basis for urban animal management.

Much of the confusion, which this thesis attempts to resolve, is because the notion of a 'pet animal' includes the assumption that the domestication of an animal is a cultural event. That is, human desires and behaviours created pet animals. The central argument of the thesis is that the relationship with 'pet animals', especially the dog, is in fact a biological event and this begins to explain the depth of the physiological and psychological linkages between people and dogs.

Even natural scientists, when attempting to unravel the confusion created by the term 'pet', have tended to use a cultural perspective. For example, Michael Fox (1980:72–8), though himself deeply persuaded by the ethic of stewardship for animals, considered that pet keeping is a need–dependency relationship similar to human–human relationships, as evidenced by the grief the human keeper may feel at the loss of a pet.

Lorenz (1959:186), on the other hand, considered that the grief over the loss of a dog was different in that it could be assuaged by the replacement of the dog, whereas there is no substitute for a loved human companion. McBride (1991:93–105) considered the domestic relationship with an animal was economically rational but also intimate, whereby mutual psychological adjustment was called for. If the adjustment was one sided, as with factory farmed animals, he questioned the morality of the relationship. James Serpell's (1986) important analysis of pet keeping, while appreciating, for example, the powers of non-verbal communication of dogs and cats as attributes which gained them entry to human habitation, nonetheless retains a cultural perspective. This thesis argues the powers of non–verbal communication are an effect of co–evolution rather than a cause of an association.

It is this co–evolution that suggests an explanation for the metaphysical aspects of the relationship. The late W.T. (Bill) Williams, a distinguished botanist, spoke on the ABC national radio program *Ockham's Razor* about the human–canid relationship. Following is an extract from the transcript of his talk:

> A few years ago I lay for weeks unconscious in 'Intensive Care', and was not expected to recover. A friendly Sister at the hospital — perhaps feeling that, whatever the regulations, anything might be worth trying — allowed a friend to bring me my then dog (Joe, the predecessor of Shannon) to see me; and so, for a little while, he lay beside me. I am told that, unconscious though I was, I automatically put out my hand to caress him, and was rewarded by a few comforting licks. To the surprise of the doctors, I did recover; and I believe that the keen sense of love and loyalty that was able to penetrate even the mists of

> unconsciousness in which I was embedded contributed to my recovery (Williams pers. comm. 1994)[61].

Perhaps this is what Gail Vines called the 'secret power of pets' (1993:30–4) at work. Certainly, the human–dog bond exists as a concept in William's mind and presumably has entered the folklore of the hospital too.

A bond something like Lorenz' *kumpan* can also be observed in countries where the keeping of dogs as pets is not as common as in the West. As described in Chapter 1, the writer conducted field studies to obtain an appreciation of the relationship between people and dogs where the concept of 'pet dog' was not applicable. The writer visited India over the period 3 December 1993 to 28 January 1994. General observations were of the poverty of most human beings and animals in public places, yet food was observed to be placed for the street dogs in New Delhi, for example, and a woman of the poorest of the poor (cited in Bandyopadhyay 1986), the street people in Madras, was observed to show affection for a puppy.

However most field study time (five weeks in December 1993 and January 1994) was spent at an animal sanctuary known as Help In Suffering, at Durgapura, a suburb of Jaipur, which is about 230 kilometers south of New Delhi. Observations on the street dogs have been mentioned in Chapter 3 but several interesting observations can be made on the human–canid relationship also, so the sanctuary is described in some detail. The case of

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[61] The continuation of this story has a poignant symmetry in that, in 1996, while having a beer at his local pub, Bill Williams tripped over Shannon's lead and died (Jonica Newby pers. comm. 1996).

the dog 'Grumpy' is offered as a particularly interesting example for discussion.

In Jaipur there are an estimated 76,000 street dogs and about 15,000 dogs which might be said to be privately owned as pets (Ramchandrani pers. comm. 1993). Local government 'sweepers' who are assigned to localities were organized by the authorities to count the street dogs in their locality. In Jaipur it is likely that most dogs are short lived, many dying when still only pups (Christine Townend pers. comm. 1995).

Help In Suffering (HIS) was founded by an English woman (Crystal Rogers) in 1980. She bought one and a half acres of land on a wadi about twelve kilometers south of Jaipur at Durgapura and established a sanctuary for animals and people. Really, what she set out to do was provide a place for them to die in peace. At the time under discussion (1994), there were about twenty dogs at the sanctuary, and a shifting population of three to four human dependents 'patients'. With staff and their families, there were over twenty people living at the sanctuary and the atmosphere was rather like an ashram (retreat), but had no religious base.

Over the years the land was developed, trees planted and buildings established. The sanctuary in 1994 had a clinic, office building and kitchen, two kennel blocks, a stable and several residences. Most funding came from the Federation des Jeunes Amis des Animaux in France/Switzerland but significant funding came from Australia also. The suburbs were encroaching upon the land, which affected its resale value positively but also presented

problems for management, since the dogs bark at night. HIS entered an agreement with the World Society for the Protection of Animals (WSPA) based in London to carry out a pilot desexing campaign for dogs, and WSPA built a surgery on the site.

HIS is operated by a board of trustees who were, at the time of the field study: Christine Townend (who with Peter Singer from University of Melbourne started Animal Liberation in Australia); Raja Atal (formerly an Ambassador for India), Dr Ramchandrani (who is President of the Rajasthan Veterinary Association), Dr Bajaj (retired Director General, Department of Agriculture, Rajasthan), and a businessman, John Singh.

A veterinarian, Dr Tak, visited the center daily for about 2 hours. The throughput at the clinic was impressive, amounting to several thousand animals a year. One of these animals was 'Grumpy', so named by the Assistant Manager of the sanctuary, a young woman originally from Scotland, because he snapped at all sanctuary staff. 'Grumpy' was a male dog that lived in association with a shop, where the shopkeepers fed him vegetable scraps. He suffered from what was probably the heritable disease chondrodysplasia with which dogs present with extremely bowed fore legs. All–in–all, 'Grumpy' was an unprepossessing dog.

'Grumpy' was brought to the sanctuary after being involved in an accident with a vehicle in which one of his paws was damaged and the skin scraped off down to the bone of two digits. 'Grumpy's' associates brought him to the clinic, and he was admitted for treatment. The wound was slow to

heal, partly because 'Grumpy' was so difficult to handle that dressings could not be changed easily, and so 'Grumpy' remained at the sanctuary for several weeks.

During that time, 'Grumpy's' associates, the shopkeepers, visited him regularly, bringing him tomatoes[62] to eat, since 'Grumpy' was particularly fond of this fruit. In time, 'Grumpy' was returned to the environs of the shop and re–established his residence there. At no time during their visits to the sanctuary were 'Grumpy's' associates seen to pet him, though they spent time sitting near him. The relationship appeared to be one of being in an association, rather than one of possession. There was no apparent economic reason for them to be concerned about 'Grumpy' since street dogs were plentiful and one could easily have been encouraged to replace him as a watch dog.

The example of 'Grumpy' and the idea of one species being a *kumpan* for another are intriguing because it suggests an evolved association. Such an explanation is more satisfactory than the limited dimensions imposed by the concept of pet keeping. Deconstruction of the concept of pet keeping does not lead very far, since the premise of

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[62] Grumpy's partiality to tomatoes is interesting in the context of this thesis, in which it has been suggested that dogs and people evolved an association in a geographical locality and spread over the world together. Late in 1994 the writer learned that chondrodysplasia is a heritable problem in Malamutes, a breed of dogs originating from the north of North America and of increasing popularity in Australia. After inquiring of a Malamute breeder, the writer was intrigued to learn that her Malamutes and other Malamutes of which she was aware, have a liking for tomatoes (Judy Paul pers. comm. 1995). In 1996 the writer observed and photographed a condition that appeared identical to Grumpy's in a village dog in Papua New Guinea, near its northern border with Irian Jaya. The tomato taste test was not, however, applied because no tomatoes were available!

anthropocentric purpose soon leads to an economic explanation. See, for example, Serpell (1986:103) who noted 'the inexplicable strength to the bond' between people and dogs and cats, and suggested part of the explanation lay in those animals' powers of non–verbal communication. And yet, Serpell considered pet keeping to be economically rational, arguing that to keep a dog for companionship is as reasonable as it is to put on an overcoat in winter, and that pet keeping is adaptive for survival (Serpell 1986:119). However, the discussion above shows that a broader theoretical base than human self-interest is necessary to illuminate the 'inexplicable'.

Rules and regulations to the contrary, even within the modern urban environment dogs can have a complex life if left to their own devices, as, this thesis has argued, they always have had. Elizabeth Marshall Thomas (1994) brought an anthropologist's perspective to the study of the behaviour of urban dogs in her care, but under relatively little control. Her book *The Hidden Life of Dogs*, became a best seller in the United States and is a celebration of the irresponsibly owned dog. The book reported extensive observations of eleven dogs, based on over a hundred thousand hours of observations. Thomas showed without doubt that the dogs interacted in a complex way with their own and the urban environment. Her writing is in contrast, as Thomas noted (Thomas 1994:2), to the conclusion of Alan Beck (1979:51–5) who also studied urban dogs but from the perspective of dominion and stewardship. Beck dismissed those dogs not under control with the comment that 'when running free, urban dogs are at best pitiful and

at worst destructive' (Beck 1979:54). Beck was an influential writer on this theme in the 1980s. Thomas made heavy use of anthropomorphic images[63] to describe the interaction of the dogs. Beck also demonstrated this tendency (he referred to the dog as the 'foremost ambassador of animal life in the city' [Beck 1979:54]). Anthropomorphic images are not helpful for policy makers who seek to represent wide ranging views in a community but in fact if dogs and people co–evolved, careful anthropomorphism might well be justified as Thomas argued.

However, while Thomas' anthropological perspective provides interesting information on dog to dog interactions, and her book provides a refreshingly different view to those self–conscious views of the social engineers who advocate increasing control over urban dogs, her perspective is ultimately unsatisfying because she resorts to anthropomorphic terms which are heavily laden with values from other discourses. Thus, for example, she refers to a dog as having a 'little wife' and being the 'beloved' of that little wife (Thomas 1994:106). These are terms that would be controversial even in the human context.

The point of the above discussion in this section has been to show that the concept of an 'owned pet' dog is quite inadequate to explain the relationship between people and dogs in widely differing circumstances. Therefore the dominant public policy for urban animal management in

[63] Thomas argued that anthropomorphism was justified in relation to dogs, and assumed motives on behalf of the dogs (see, for example, Thomas 1994:xvi–xix).

Australia — responsible pet ownership — is a weak basis for sensitive administration of policies which affect a deeply seated need for people to associate with animals. Responsible pet ownership as policy is therefore unlikely to be equitably or effectively administered.

Economic rationality

Chapter 3 dealt with the economic reasons usually given for the domestication of dogs (in that chapter the culturally based concept of domestication in only the past few thousand years was questioned). A naturalistic perspective explains that the usefulness of dogs to people is a sign of interdependence rather than a cause of domestication, thus turning a cultural explanation such as economic utility on its head. In short, the chapter argued that an association with dogs is a precondition for the evolution and survival of *Homo sapiens*.

In this section, however, the economic rationality of dog keeping is accepted at face value for the sake of continuing the argument. Most economic arguments are straightforward and self-evident. They were listed in Chapter 3 but are summarized here for convenience as scavenging, protection, companionship and for hunting (whether that be of food animals or criminals). Of these it is protection of the human home base that is most significant in the naturalistic perspective argued for here. It is the usefulness of the dog in protecting the home base which is discussed below.

It may be remembered that it is conflict between groups which was discussed in Chapter 2 as a critical event in the evolution of *Homo sapiens*. For the past three years the writer has lived in Port Moresby which has long suffered from a reputation as a city where crime against persons and property is rampant. Savage attack dogs are imported from Australia by security firms. One or more of these dogs with handlers are delivered at dusk to guard the homes and properties of the relatively wealthy. The dogs are picked up each morning. Dogs and handlers guard banks and supermarkets, and so on, during the day. It is considered by security firms and private citizens that only large savage dogs strike enough fear into the hearts of criminals to dissuade them from perpetuating crimes (Christopher Pritchard pers. comm. 1996, Alphonse Bannick pers. comm. 1998).

The criminals often come from squatter settlements within Port Moresby where the level of poverty is unprecedented and desperate, formal employment is virtually unattainable, and links with their original village communities are no longer feasible. Squatter settlers therefore adopt 'survival ethics' (Chao 1989:88–106) rather than the community ethics of competition tempered by cooperation, regarded as creative by Aldo Leopold (1967:402–15). Chao spent some years studying conditions in the Nine Mile, Sabama and Kaugere settlements and considered that squatter settlements could develop an ethics of community if allowed to participate in developing political solutions to their dilemmas. Until lasting solutions are developed however the attack dogs remain as evidence that many of the

relatively wealthy *Homo sapiens* in Port Moresby also have adopted survival ethics.

The question arises: why depend upon the dog for protection? Many other animals also have sensory apparatus much in advance of the human being and ways of signaling alarm. Many are territorial. Many can be trained. Many can be savage. If the dog could be developed during an association only 12,000 years old, so might have other animal substitutes, but they were not. The answer that this thesis offers is that the dog and human being evolved as an interdependent unit before 'human civilization' occurred. Thus what now appears as an economic association based on human choice is argued as actually based on the biology of struggling to survive against other human beings.

It was mentioned in Chapter 3 that the highly advanced Israeli military machine recently resorted to a line of watch dogs to protect against Palestinian suicide bombers (*Sydney Morning Herald* 31 January 1995:8), and the role of dogs in detecting bombs and illegal drugs is well known.

As the animal behaviourists Catherine Houpt and Thomas Wolski noted: 'apparently no modern human invention is as reliable as the canine olfactory mucosa for detecting smells' (1982:6). Thus an association with dogs still functions to permit the survival of one human group in competition with other groups.

Conflict situations

Two major conflict situations are discussed in the next two sub-sections: attacks and diseases spread between dogs and people. Both these conflicts easily become politicized and difficult for policy makers seeking to balance the needs of members of the community. The naturalistic perspective permits a politically neutral view of the dog as a dynamic in human communities which should be appreciated by public policy makers, even where the dog is in a relationship of conflict with members of the human community.

Attacks by dogs on people

Dogs figure frequently in newspapers, often positively but also negatively, as in the case of dog attacks. When an attack occurs, the issues become political and policy makers need to respond in such a way that the public is reassured that appropriate action is taken. In March 1993 an attack occurred on a nine year old girl in Canberra who was severely bitten by two dogs. This led to the of Minister for Lands, Environment and Planning convening a seminar to canvas views of organsiations and community groups and then a workshop was set up to make recommendations. Arising from the seminar, the writer conducted a study of activity by the Dog Control Unit (and, by inference, of dogs) in four suburbs. The report of the seminar, workshop and of the results of the study are at the Appendix to this thesis. Conflict situations are more likely to figure on the agendas of makers of public policies, partly because of the adversarial nature of the discourse of control,

than are positive reports on interactions between dogs and people. When there is a positive attitude to dogs and to participation of the community, policy makers might well see their agendas listing policies to be made on, for example, dog exhibitions, 'pet weeks' and visits of dogs to institutions such as homes for aged people. In the Australian Capital Territory these activities are usually initiated by community groups such as the Companion Dog Club of the Australian Capital Territory, the Canberra Kennel Association, the Royal Society for the Prevention of Cruelty to Animals, the Australian Veterinary Association and so on.

The dog is valuable for guarding purposes, as mentioned above in the section on the economics of dog keeping, but the behaviour of the dog is unpredictable by human rationality. It is of course not known how important dog bites were in prehistoric human home bases but it can be said that dogs in urban situations today in Australia bite many persons and some persons may be killed by dogs. Since many bites are never reported or do not require medical attention, it is likely that the overall level of biting of human beings by dogs is under recorded. It is also possible that the problem of dog bites as a societal issue is overestimated. The reasons for this may be manifold, and relate to other values in society. For example, some 160 dog attacks are brought to the attention of the ACT Dog Control Unit each year, according to veterinary officer Will Andrew (pers. comm. 1994), who noted that most attacks occurred within a hundred meters of the house at which the dog was kept. However, few of these attacks receive focussed media attention unless a female and/or child in a public place is involved. Media attention could

thus also be considered as delivering a warning to women and children, rather than as an auditing of the dogs' activities, and may thus be seen as part of the discourse of control of the particular society.

The dog does not seem to rate as a particular danger to Australian society, compared with other risks. Reports of the Child Accident Prevention Foundation of Australia indicate that injuries around the home are the most common cause for Australian children to be presented for hospital attention, and the Foundation stresses the importance of making homes less dangerous for children by promoting safety centers which demonstrate how to design homes so as to avoid or reduce hazards children might encounter in the home environment (MacKellar 1991:575–76). In a brochure published by Child Accident Prevention Foundation of Australia (n.d.) the major causes of injury to children are stated as falls, burns and scalds, poisoning and bites. The source of the bites is not stated but presumably the list refers to, mainly, bites by dogs. In the brochure the Foundation advises that, on average, 5,000 children need medical attention each day in Australia and, of these, 200 children are admitted to hospital each day.

Peter Thompson (1997:129–32) examined the impact of dog attacks in the catchment area of the Queen Elizabeth Hospital in Adelaide between January 1990 and July 1993, using data from the South Australian Health Commission's Injury Surveillance System and the 1992 South Australian Health Omnibus Survey. His core data appear to be 356 persons who

presented to the hospital during the period, of whom 49 were admitted to the hospital. He found that children to the age of four years who had been attacked by a dog were twice as likely to require hospital treatment than adults, but men aged over 76 years of age may also require a disproportionately high rate of hospital treatment. Most children had been bitten on the face or head. Thompson (1997:129–32) estimated from his data that some 100,000 Australians are bitten each year and that 13,000 require hospital treatment. He focussed on six breeds of dog as most likely to be involved in attacks on people and recommended restricting availability of these breeds and/or licensing persons who could own such breeds, generally stricter control of dogs in public places through leashing, a national publicity campaign to alert parents of young children to the dangers of dogs, and a third party insurance scheme with premiums to match ownership of high risk breeds of dog. Thompson cited data from the 1992 South Australian Health Omnibus Survey which suggested that half of 3,093 persons surveyed in Adelaide feared being attacked by a dog and about 10 per cent changed their behaviour because of this fear. Almost 2 per cent of those sampled had major concerns about dog attacks.

If Thompson's estimates of the disproportionate presentation of child dog bite victims at hospital and the estimates of the Child Accident Prevention Foundation of Australia above are considered, dog bites appear as significant individual events, though perhaps not as a threat to the national well being. Each generation of Australians apparently needs to come to terms with its association with dogs. Thompson's recommendation

that parents tell their young children about the risks they might face from dogs makes naturalistic sense.

Comparable data on dog bites in Australia is not readily available. Often the data may be derived from research conducted primarily for other purposes. For example, Thomas and Buntine (1987:536–40) studied the infection rate in dog bites. Their article provided some data on presentations for dog bites at the Austin Hospital in Heidelberg, Victoria. Of an average level of 4,000 casualty attendances and 1,600 admissions to the hospital each month, they wrote of 62 casualty attendances for dog bites in a seven month period. Their data also included treatment histories of 49 in-patients for dog bites in a seven year period. From this small collection of data they, like Thompson above, published a ranking of breeds of dog involved in attacks on people. Attempts to define the dog as an *other* often receive a hostile response. For example, Thomas and Buntine's attempt to identify the *others* among the breeds was sharply criticized by German Shepherd fancier Anne Franklin (1988:370–1), who regarded their extrapolation as unwarranted and damaging of dog keepers in general and to German Shepherd owners in particular.

Nixon et al. (1980:175–6) reviewed records of dog bite injuries of those who attended the Royal Canberra Hospital in the thirty month period from 1 January 1977. Their task primarily related to estimating doses of rabies vaccine which might be required, should the disease ever occur in Australia. Relating the hospital records to estimates of the human and dog

population in the catchment area of the hospital, they calculated some 184 hospital attendances for dog bites could be expected per 100,000 human population per year, and that the prevalence of biting was about one for every 38 Canberra dogs. Extrapolating their estimates to Australia in general they suggested that, in any given year, one Australian in 543 might be expected to require hospital treatment for dog bites. They concluded that soft tissue injury from dog bites is a relatively minor public health problem, but noted that occasionally severe attacks do occur. Bites occurred most generally to the face of toddlers, the arms of children and to the legs of adults.

Bites to the face are more likely to be presented for medical attention and therefore especially children up to about four years of age will be brought for medical attention (Rich and Nickels 1987:527–8). Filiatre et al. (1988:22–32) in their observation of children and dogs, noted that the child up to about three years of age tended to be agonistic to the dog and also that the dog tended to smell the face and arms of the child in agonistic situations, apparently to gauge the mood and intentions of the child. This most probably explains dog bites to children's faces.

The writer analyzed activity of the ACT Dog Control Unit inspectors in the period 1 May 1989 to 30 June 1993, using a sample of 1,013 dog complaint forms relating to four suburbs. The report of this analysis is at the Appendix to this thesis. The forms logged complaints ranging from stray dogs being seen in public places, through to dog attacks. Ninety of these

forms (8.8 per cent) involved a report of a dog attack upon a person or an animal, or both. From the 90 forms, the following information was extracted: in 33 per cent of the attacks the complainant reported the dog as menacing, 28 per cent resulted in injury which did not require medical attention and 39 per cent of attacks resulted in injuries which required medical or veterinary (where an animal was bitten) attention. No serious attacks were recorded involving people but several involved fatal or serious injury to animals.

Since almost 90 per cent of attacks occurred either on the nature strip, the footpath or in the front yard of the home of one of the parties to the attack, there clearly is a territorial factor as suggested by Will Andrew (above). The enduring ACT government 'no front fence' policy (mentioned in Chapter 3 and this chapter) may therefore be argued as a factor in the commission of attacks. One is reminded of Narayan's comments, which introduced Chapter 2, that we are always trying to rival nature rather than appreciating natural behaviour. The dog cannot be expected to protect only the back half of a property, the boundaries of which it is as able to recognize.

So far as this writer is aware, the most reliable picture of hostile behaviour in the dog in urban Australia can be drawn from data collated by the New South Wales Law Reform Commission (1988) during its inquiry into injuries caused by dogs. The data show that the dog is definitely part of the dynamics of urban living in Australia, particularly if it perceives its

territory to be infringed. At the Commission's request, the Australian Bureau of Statistics surveyed 2,500 of 9,930 census collectors in NSW who, on 30 June 1986, visited each household two or three times to deliver and collect census forms. Of those surveyed, 2,058 replied. The survey indicated that 8.8 per cent of census collectors had been bitten or had had their clothing damaged by dogs in the course of the census. The bulk of attacks (87.4 per cent) occurred on private land. It was also estimated that 37.8 per cent of collectors had, on at least one occasion, been unable to personally deliver or collect the census forms at the door of the household because of threatening behaviour by the dog, and had had to return when the householder was available to control the dog[64].

The Commission was concerned that the presence of dogs did not freely allow lawful entry onto private property by statutory authorities, and its inquiry stemmed from a complaint from the Police Association of NSW that its members were not adequately protected by current legislation from attacks by dogs. Several other statutory authorities provided information to the Commission. For example, the Commission was informed that the Australian Postal Commission in NSW received 205 reports from employees of accidents involving dogs in the year to June 1986. Most incidents (75 per cent) occurred on private land, often when the owner of the dog was present, and the most serious injuries related to falls from postal

[64] Other animals showed territorial inclinations, including a horse, a bull, geese, pet emus and plovers. A horse bit one collector; a large pig chased another.

service motor–cycles. The NSW Police Department statistics for 1983 indicated that each month, on average, one dog attack occurred which required an officer to take at least one day off work. A spokesperson for the Metropolitan Water Sewerage and Drainage Board, on the other hand, informed the Commission that dog attacks were not a significant problem, there being only two or three attacks per year on its staff of fifty meter readers.

The Commission concluded that not all problems associated with dogs could be resolved through legislation but would ultimately require co–operation between dog owners and complainants. The Commission considered that education programs should be conducted to change attitudes of dog owners and to inform them of their legal responsibilities, and that such programs would foster good community relations and reduce public expenditure relating to dogs. The Commission considered that 'there are marked similarities between problems of litter control and dog control' and recommended the adoption of the 'Do–the–right–thing' approach of the State Pollution Control Commission which had been successful in reducing littering in public places by 70 per cent over eight years (New South Wales Law Reform Commission 1988:16)

In reporting its findings, the Commission did not refer to the instinctive behaviour of the dog or of the dog–person unit, other than to consider that behaviour by the keeper that permitted the dog to be defensive was irresponsible if such behaviour prevented lawful public access to

private land (New South Wales Law Reform Commission 1988:13). The Commission did not address the stimulation of defensive behaviour. For example, the dog may have been stimulated to attack because its keeper was present, or it may have been stimulated by the noise of the motor–cycle.

Australia Post is the main deliverer of mail in Australia. At the request of the writer, the Regional Manager for the ACT Region of Australia Post analyzed records of incidents involving Postal Delivery Officers and dog bites. The data described the number of delivery workers who had reported dog bites and whether time was taken off work due to the bites. The Regional Manager wrote: 'as you can see our dog attacks are very low in the ACT' (pers. comm. 18 and 26 July 1995). Table 3 presents the data.

Table 3: **Impact of dog bites on Australia Post Delivery Officer work data**

Year	Total delivery staff*	Bitten but no time lost from work	Bitten and time lost from work
1993/94	230	4	1
1994/95	240	4	1

* These numbers are approximate as they relate to the 'Postal Delivery Group' which includes all Delivery Officers who work indoors and outdoors, and also part time and casual staff.

Source: Australia Post letters of 18 and 26 July 1995.

The above comments show that the dog remains a dynamic part of human existence. The New South Wales Law Reform Commission (1988:14 and 15) sums up the situation in the modern urban situation: because control of dogs 'relates very much to community values and public understanding of the law ... all problems associated with dogs cannot be solved by legislative change alone' and requires the cooperation of the dog keepers and those who need to gain access to private property. The Commission considered that education which addressed the attitudes of the keepers of dogs is necessary to avoid extreme positions for and against dog keeping. The Commission (1988:16) referred to successful cooperative schemes which had been instituted by Councils in New South Wales to encourage community participation in, for example, dog obedience classes.

Zoonoses

Zoonoses are diseases that are transmissible between people and animals. It can be argued as a questionable category because it begs questions about its own terms of reference (people **and** animals?). It is a classification of value to public health administrators wishing to stress otherness in the interests of human survival, but one which can mask the public health benefits of interactions with other animals, already mentioned above but also demonstrated by, for example, tethering livestock strategically in a village to divert potential insect vectors of blood parasites (Butcher 1990:28). The fact of transmission shows a biological connection between species, although that connection need not be close in evolutionary terms (for

example, the causative agent of psittacosis can be transmitted from birds to people).

The dog has been discussed in this chapter in relation to psychotherapy programs. Peter Schantz (1990:14–23) warned that such use of the dog does have attendant risks. He categorized the risks as bites, allergies and diseases that can be transmitted between animals and human beings (zoonoses). Schantz provided a comprehensive and useful table of zoonoses which involve dogs.

Among the most widely feared zoonoses is rabies. Discussion of rabies provides an insight into the way the discourses of public health and dog control can become entwined. Even in countries where the disease does not exist, public policies include precautionary measures against dogs, and this situation has a long history. Harriet Ritvo (1987) devoted a chapter, *Cave Canem* , to a discussion of the politics of rabies control in Victorian England. She concluded that 'rabies may have been more threatening as a metaphorical disease than as an actual one' (Ritvo 1987:170). The disease had a high profile from 1750 to 1900, even though few cases actually occurred. George Fleming, a veterinarian, when consulted, suggested that the three main reasons people were terrified of rabies, despite its relatively low incidence, were: its long incubation period, the pain and certain death it caused, and because cherished companions often were the agent of spread. Ritvo argued that public health experts 'captured' rabies into their discourse,

to allow those experts to effect certain novel social interventions, such as the promotion of vaccination as a routine measure against disease.

In Australia, fear of rabies informs national quarantine policy. As already mentioned, the threat of rabies is also used as a 'forceful argument for urban animal management' (Banks 1992:59–68) even though the disease does not exist in Australia[65]. Within this discourse of fear, Banks noted 'if responsible pet ownership is important now, it would become critical in the event of a rabies outbreak, and might well be the deciding factor in an eradication campaign' (1992:67). Thus a hypothetical risk is used to shape present policy. A counter perspective is the naturalistic view of Forman (1993:81–83) who discussed the risk of rabies entering Australia and noted that the maintenance of the rabies cycle is a highly complex interaction of virus, host and environmental factors. As a result, he concluded that 'perhaps the only realistic risk is the introduction of a dog–adapted virus, perhaps from an Asian urban rabies cycle, entering in a dog that then came into contact with wild or feral dogs' (Forman 1993:82).

[65] A virus similar to rabies virus has been isolated from some fruit eating bats in Australia.

Real risks seem to lack the effect of hypothetical ones. Hydatid disease is a zoonosis which can have a high incidence in certain areas, including the ACT. Yet public health authorities have scaled back interventions, having closed the Hydatid Disease Unit in the ACT. In human beings, the disease involves cysts forming in various organs, including the brain, often with fatal results. The dog/sheep/human life cycle of the parasite is discussed here, but other animal hosts can be involved. The causal agent is a tapeworm, *Echinococcus granulosus*. The common cycle in Australia may be summarized briefly as: *E. granulosus* in the small intestine of the dog, eggs passed in the dog's faeces onto pasture where the eggs may be swallowed by sheep, cysts develop in the sheep and if, for example, the infected liver of the sheep is eaten by a dog, the cycle is completed. The human being can be infected if the tapeworm's eggs from the dog are swallowed, as might occur when fingers become contaminated with eggs adhering to the dog's hair, especially hair around the dog's tail. Cysts then develop in the human host as they do in the sheep. In Australia the prevalence of hydatid disease in people since 1966 varied from 0.46 to 3.1 cases per 100,000 persons, or 2.6 to 11.2 cases per 100,000 persons in rural areas. However, prevalence can reach 27.5 cases per 100,000 in certain rural areas, such as around Canberra. A similar prevalence occurred in Tasmania until hydatid control measures aimed at breaking the life cycle were introduced, when a dramatic reduction in human cases was achieved (Cole 1986:195).

In principle, the control of hydatid disease is simple, involving treatment of the dog, controlling it and preventing its access to sheep offal, but in practice little has changed in mainland Australia. Although the human being may be regarded as an 'accidental host' (Cole 1986:190) of *E. granulosus* since human beings do not pass on the disease in Australia, it must be remembered that at different times and places in human history, human bodies were eaten by dogs. Given that the prevalence of hydatid cysts in people can be high, it seems reasonable to suggest that hydatid disease could have as its origins a dog/people cycle, and could have been a population limiting disease in prehistoric and early historical times.

Local authorities use fear of other, less dramatic, zoonoses in an attempt to effect controls over urban animals, especially dogs, in public places. For instance, Lou Leather (1994:6–21) reported how in a local government region in the United Kingdom, the risk of toxocariasis (a situation where the larvae of nematodes of *Toxocaris* species may infect people who come in contact with the faeces of infected dogs, cats or foxes) was used in a campaign to force through legislation on a 'scoop law' requiring dog keepers to pick up dog faeces in public places. The attempt was unsuccessful because of excessive public reaction for and against dogs due to the campaign, and since the expert advice used could be countered by advice from opposing experts. Lou Leather was invited to speak at the third national conference on urban animal management in Canberra in 1994. He is the spokesperson on animal welfare and pet issues for the Institution of Environmental Health Officers in the United Kingdom. The Institution had

focussed on the evidence that migrating larvae of the dog nematode *Toxocara canis* could cause blindness in human beings. However the evidence quoted by the Institution shows that while exposure to *T. canis* is high in human beings, there is little evidence of overt disease. This reality must have been obvious to the sample of the British public with which the Institution dealt. A naturalistic perspective would suggest that evidence that one species was exposed commonly to the disease (in this case, *T. canis*) of another species without the first species showing significant symptoms, indicates a long biological association. In the end the rationale for more effective control of dogs which proved acceptable to the sample of the British public was simply that dog faeces were unaesthetic, a point on which there was no disagreement, and this provided a base on which to frame legislation.

The attitude which sets the dog as an *other*, as a carrier of diseases which affect people, is confounded by the observable fact that diseases transmissible between people, or caused through human error, such as food poisoning outbreaks, are far more common than those transmitted by dogs to people.

Indeed an antithesis to *othering* for disease can be put forward. It has already been mentioned above that an association with the dog appears to benefit the health status of some people. One possible facet of this association is that the virulence of an organism for one host may be attenuated if the organism is passed through another host (Slauson et al.

1990:493). This is one of the fundamental principles of vaccine production. Human measles virus, for example, is easily passaged in dogs and, in fact, protects them against infection with canine distemper virus. Of course, the outcomes of organism/organism interactions are complex, but the question may be raised whether urban policy that seeks to turn a city into a monoculture of *Homo sapiens* is only feasible through continuous use of therapeutic substances by its human inhabitants. This is the situation that exists in agricultural monoculture, especially broad acre agriculture, where vast amounts of pesticides and herbicides are necessary to achieve the economies of scale associated with the monoculture process. An alternative to monoculture is permaculture, a concept developed by Bill Mollison (see, for example, Mollison 1988) but incorporating the integrated agriculture of some traditional farming methods.

It is reasonable to conclude that, if a complex evolved which included the human being and the dog, organisms which parasitized these species might also have evolved towards attenuation, since more infectious organisms could be shed by a long–lived host than one which succumbed quickly to the infection. The conservative effects of natural selection would tend to create a dynamic equilibrium within the complex. Thus the invisible paw would help to shape human health and well being in an extended phenotype.

Towards a theoretical basis for why human–beings derive companionship from the dog

Despite conflict situations the association between people and dogs is durable. Even though this thesis argues that the association is not one of pet ownership, it is as a pet that the dog has most often been studied. The discussion of quantitative and qualitative attempts to clarify the human–pet relationship has shown how complex and real that relationship is, and yet how enigmatic it remains, despite the considerable collection of data which exists.

Kidd and Kidd (1987:140–57) sought an over arching theory which would allow conflicting data on the bond between human beings and animal companions to be disaggregated and reorganized. Since the data collected since about 1983 had been shaped through models, they suggested models be used to identify groups of data. The models they suggested were: human/human, human/object, animal/animal; human/animal. Kidd and Kidd recognized that all models had important failings. For instance, if the human–animal relationship is viewed by the human/human model, then the animal becomes a substitute for another human, which clearly is not a satisfactory overall explanation. The human/object model failed also because it assumed that birds, for example, could be satisfactory substitutes for dogs as companions of people, which does not seem to be the case. The animal/animal model, in their opinion, is limited because most data in ethology are collected on the basis of intra-specific comparisons.

Nonetheless, they suggested, an attempt to organize the data using the models could be worthwhile to illuminate strengths and weaknesses, similarities and differences between the various explanations for the bond between people and animal companions.

Kidd and Kidd's (1987:140–57) search for a unifying theory is entirely understandable. They were major contributors of the data that has accumulated on the human–animal bond and wished to know what the body of data means. It can be seen, however, that their suggestion to work from data represented that same Cartesian frame of thinking, referred to in Chapter 2, requiring inductive logic and data to work from, which distanced human thinking from an appreciation of the animal as subject. Nonetheless, as Emy (1989:188–204) might have said, it is necessary to develop pieces of the jigsaw puzzle in a disciplined way, while recognizing that it is an overall understanding which will make them fall into place.

Kidd and Kidd's (1987:140–57) paper in *Anthrozoös* included peer comment. Summaries of the comments follow. Herzog and Burghardt (1987:145–6) considered that modeling of data was an inadequate approach because it would not provide fresh insight into the intense relationships between human beings and other animals. They considered that Kidd and Kidd had acted prematurely, given the fact that social scientists had only recently begun to explore human–animal relationships which, as well as having intrinsic complexity, also were affected by cultural, species and functional differences. They considered Kidd and Kidd could have taken

into account evolutionary biology, whereby an association with a barking dog, for example, enhanced survival of the human being. They commented that psychoanalytic theory (the symbolism of the animal, for example) and dominance theory could also have been considered. Lawrence (1987:147–8) argued that Kidd and Kidd's theory fell short of dealing with those people who dislike pets: 'the animals' otherness for these people preserves a dividing line between species, precluding intercommunication' (Lawrence 1987:148) and yet the people themselves are, to all appearances, perfectly well adjusted and sociable.

Messent (1987:149–50) also considered an all-encompassing theory on the human–animal relationship to be premature though he did think it may be possible to develop such a theory at some time in the future. He noted that good quality data and interdisciplinary cooperation would be required to service such a theory and these factors are already lacking in much more established fields of research. He contended that 'if a positive selective reason could be found for affiliative interspecies relations' (Messent 1987:149), it might be feasible to develop a testable theory, but considered that 'a natural selection benefit is an irrelevance' (Messent 1987:150) in too many observations on human–animal relationships (the argument developed in earlier chapters in this thesis is that a tolerance for the dog benefits the group rather than the individual, though Messent is being negative there, too. For human habitations to survive, only a proportion of their inhabitants need to be tolerant of the dog. Whether the animal is kept as a pet is not the issue. In those habitations, it would not

have been possible for human beings to survive while flat faces/speech apparatuses etc. evolved unless they could divide sensory labour with an animal such as the dog).

Rollin (1987:150–2) challenged the use of the scientific method, and noted that science often failed when applied in sociology, because the scientific method is presumed to be value free, which flies in the face of common sense. Indeed, he argued that the scientific method trivialized a rich area of research in anecdotal evidence. There was no doubt that animals were beneficial to human beings, he argued, and the scientific method tended to obfuscate this important observation. He asked: 'is it coherent for them [animals] to enjoy the legal status of property while we speak of them as partial persons' (Rollin 1987:150–2). Serpell (1987:152–3) considered that Kidd and Kidd had virtually ignored ethology when they dismissed the animal/animal theoretical model of human/animal relationships, considering the companion animal as merely a product of neotenization through domestication. Serpell commented that ethological research into human–animal relations had potential for providing a theoretical bridge between studies of human beings and animals.

The comments which Kidd and Kidd received from their peers show that, while there seems to be consensus, especially in the psychological literature, that a human–animal bond exists, its nature remains enigmatic. This situation is not surprising, since the tool of analysis, the human brain, has been argued in this thesis as co–evolved with one of the subjects of

analysis, the dog. Thus, the naturalistic perspective of this thesis illuminates the postmodern appreciation of the complication of the observer as a participant in the study.

Search for a paradigm: a concluding comment

A perspective slightly towards the human side of a naturalistic perspective may assist the discussion to continue. The orientation of people towards animals or things is one such perspective. Adelma Hills' (1989:100–10) study offered potential for a fresh and novel approach, in that it examined the human being as an object. Hills argued that a person's attitude to animals is related to their attitude to other people and to things. She used a scale of person/thing orientation that categorized people into four main groups: thing specialists, person specialists, generalists, and non-specialists. In her testing of 101 people at universities in Western Australia, she found that a modest correlation did exist between person/thing orientation and relationship with animals, but only 31 per cent of the variation found could be explained by person/thing orientation, gender or age. She queried what other factors could be involved. Her study found that females and persons highly oriented to animals were more likely to perceive animals as people and that the gender difference was probably related to person/thing orientation. The variations were more pronounced when more 'developed' species of animals were the topic of study. She argued that her results raised an important issue in the selection of managers in animal–related enterprises: if animal carers were dismissed because they were considered too emotionally involved with

animals, a bias could be inserted inadvertently which led to the selection of managers who were careless about people.

Although Hills' study was not conclusive, it is discussed here as further evidence that it may be beneficial even in contemporary times in developed countries for the organized human group to include a proportion of members who relate to animals as other than things. The animal association can thus again be argued as having continuing biological functionality for the human group.

To recap, it is the argument of this thesis that there was a functional relationship between human beings and canids in home bases and, for this reason, co–evolution and interdependency came to exist. Indeed, it has been the purpose of this chapter to show that the relationship is a reality with public significance. This relationship does not necessarily mean that dogs must be kept as only pets: rather, pet keeping is an outcome of the relationship. Clutton-Brock (1987:14–15) has previously been referred to as suggesting that a strong sense of nurturing could have survival value in human groups, and could spill over into pet keeping. This suggestion is not in contention, but is not the central argument that is employed in this thesis. Rather, the question is addressed as to why certain animals meet the human requirements for nurturing. The answer offered is that they evolved a biological interdependence in a way that gives strength to the 'invisible paw' idea. It is possible to conceive of survival advantage for a community if its members have a predisposition for diverse relationships with animals. It can

even be argued that relationships with the dog maintain the nurturing releasers in 'working order' which could be important in the human species which cares for its young for ten or twenty years or even longer. Research would be interesting into the relationship between extended parental caring for young adults in modern western society and their parents' attitudes to dogs.

This chapter raised several other issues of relevance to policy makers and administrators, among which was the suggestion that the principles of permaculture which are accepted in agriculture, could be applicable in the urban situation. Thus the dog may be seen as one animal connected in unspecific ways to the health status of the human animal, and could have a major role in ameliorating surges of pathogens causing disease in people, by slightly modifying the virulence of the organism.

Such functionality can be the basis for one paradigm in which to develop public policy and administration concerning the urban dog. Although they did not develop that line of inquiry in their paper mentioned above, Kidd and Kidd (1987:140–57) referred to a category of theory, the functional paradigm, which allows both inductive and deductive ways of thinking to be accommodated. It is within this paradigm that the argument is developed for viewing, for practical public administrative reasons, human–canid relationship as a phenomenon that evolved biologically as well as culturally. Evolutionary theory is based on the assumption of chance and does not accommodate teleology, but interactions and outcomes can be

regarded as having a function within the broader theory. In other words, the 'invisible paw' analogy may serve the same purpose as the non-religious solution Adam Smith sought in explaining human commerce. The idea of an 'invisible paw' may be as useful as Adam Smith's suggestion, and serve as a way of thinking for urban policy makers and administrators which can be used in addition to the traditional idea of God given dominion over the dog and the modern certainty that the dog was created through human ingenuity. The 'invisible paw' is value free, in the sense that both human beings and animals are regarded naturalistically, and therefore the idea can be applied more widely in public matters than the consumption oriented notion of the 'secret power of pets' (Vines 1993:30–4) which is limited by the inherent assumption challenged in this thesis as an anthropocentric conceit: the animal as an object, defined through human ownership. Although Serpell makes the point that 'pet owners do not value pets primarily as objects, but rather as subjects' (1986:86), the discourse of control clearly casts the dog as an owned object in the human urban environment. This, of course, is Barbara Noske's point about public policy making: 'as yet there exists in our thinking little room for the non–human Subject and what this would imply' (1989:157).

Noske's challenge is met in the next chapter. There, the broad significance to *Homo sapiens* of the issues and examples of applying the naturalistic perspective are discussed.

Chapter 5

The Urban Sextipede

> If we adapt the city to the basic nature of the human animal, instead of trying to force the human animal to adapt to the city, anything should be possible (Morris 1994:114).

Introduction

To reinforce the idea of human–canid interdependency, this chapter has been entitled, provocatively, the Urban Sextipede. As Desmond Morris comments above, it is likely to be more creative to take the animal nature of the human being into account when discussing the urbanite. In a similar vein, this thesis has argued that a naturalistic perspective has to be applied to the human being as well as to the dog in the urban situation.

In this chapter several writers are cited who have tried to draw the attention of city planners to the importance of recognizing the animal nature of human beings. Rather than accepting the modern city as a kind of juggernaut of technology which molded the people within it, these writers have argued for a postmodern view which recognizes that a complex natural environment is needed to feed the human soul.

Naturalistic appraisal of runaway technology in urban planning

The modern western city can be pathologically neat and sterile. One indication of this is that dogs cannot survive except under the protection of human beings and then only as isolated, neutered individuals, powerless to be dogs. Even the dogs to which Elizabeth Marshall Thomas (1994) gave free rein, referred to in Chapter 4, were under her protection. By contrast the observations of urban dogs in Jaipur cited in this thesis revealed that dogs and other animals are able to survive and reproduce naturally in a loose association with people. A naturalistic perspective may be a postmodernist way of viewing human beings and dogs. It sees them as rather disorderly, interacting communities of animals in the urban space. Some proponents of such urban untidiness are referred to below.

A book by Jane Jacobs (1961) which attacked the 'disrespectful' (of nature), physically oriented principles and aims of orthodox policy for modern city development in the United States in the 1950s, was widely acclaimed. She has been called the mother of postmodernism in urban planning (Bourassa 1988:1–24). Jacobs' perspective was naturalistic even though she was disparaging of environmentalists' tight focus on parks as the 'lungs' of a city, arguing that too much open space led to pollution from commuters travelling unnecessarily long distances. For Jacobs, cities were 'problems in organised complexity — organisms that are replete with unexamined, but obviously intricately interconnected, and surely

understandable, relationships' (1961:438). She argued that the naturalistic perspective afforded by the life sciences was one important tool for providing the concepts which urban planners needed to cater for the organic nature of human existence in the city. For her, 'the cities of human beings are as natural, being a product of one form of nature, as are the colonies of prairie dogs or the beds of oysters' (1961:443–44). Thus, neighbourhood parks would not function successfully unless they met the intricately related and various needs of the residents surrounding them. For example, if a park were restricted to one group of users, it would, through lack of use, become a vacuum and eventually become unsuitable for even its designated use. Jacobs did not consider the inter–relationship between human beings and other animals in the city, however, except to make incidental reference to the sentimentalization of nature. Some years later, Raymond Dasman argued that policies of urban renewal needed to include maintenance of biodiversity (he referred to wildlife in particular). He noted that crowding, which often leads to social pathologies in animals, could be achieved harmoniously in human beings if attention was given to urban utilities such as waste removal, provision of private space and achieving good will (Dasman 1968:200). Yet soon after, Forest Stearns wrote 'most students of cities have chosen to ignore the basic biological nature of man...' (1972:272).

Similar disillusionment can be found in this decade also. Desmond Morris developed a perspective of the human being as an urban ape in a series of some twenty books. Morris appeared (and continues to do so) in many television programs. When he recently summarized his viewpoint in

The Human Animal (Morris 1994), he was unsure whether he had made a lasting impact. Perhaps this is partly because Morris' writing is strongly rhetorical and not noticeably self–critical. For example, he considered (Morris 1994:99) that walls and fences were aggressive statements by the owner of the property. For Morris the structures were analogous with scent marking of territory by wolves and tigers. It is true that human beings have vestigial anal scent glands (McColl 1967:36–67) and perhaps once marked territory in this way. Whether they did so in an aggressive way is, however, a moot point. Other zoologists, such as David Mech (1970:108) and Farley Mowat (1985:115–85) who studied wolves, considered that scent marking by wolves had a more peaceful intent and probably was to avoid conflicts with strangers by warning them of the presence of the incumbents. Also, Morris' analogies tend to be drawn from situations (such as urban street gangs) which may themselves be examples of pathologies caused by poor public policy. Nonetheless, Morris has made the point that the animal nature of human beings is reflected in their behaviour.

When a technological perspective continued to dominate, however, and where the modern city was regarded as the 'ultimate human artefact' (Baumann and Kates 1972:169), the perspective of planners was, and largely continues to be, ambitiously technological. Growth in population was seen as a given to be catered for, rather than a question to be understood biologically. According to George Macinko (1967:369–83), acceptance of growth engendered further growth in city populations, often at the expense of facilities in non–urban areas. Macinko argued that, because influential

planners of cities of the future, such as Constantinos Doxiadis, assumed continued world population growth, cities were designed to cater for such populations. These planners visualized 90–95 per cent of the world's population living in urban centers, and planned accordingly. Macinko considered these planners should have paid attention to policies that blunted population growth instead of those that accepted such growth as inevitable. Of course the questions are complex and solutions are not within the realm of planners alone.

Another commentator was Elaine Morgan (1976). For her, human beings were naturally urban (as is argued in this thesis). An 'invisible' force in human behaviour led to urbanization. People preferred to congregate in cities, just as, she argued, they liked to congregate in crowds at football matches[66]. Her idea of an 'invisible force' for urbanization (or for aggregating, at least) fits into a naturalistic perspective. Morgan considered urbanization to be a stepwise process. Populations moved from farm to village and so on, until the smallest settlements were unable to survive. She, like Macinko, was aware of planners' self perpetuating predictions of urban growth. If data showed rising populations in cities, planners provided more amenities. So, she visualized the city as a locomotive, hurtling along because, as more amenities were allocated for predicted population growth (to the detriment of non–urban areas), more people were attracted to the

[66] Fox (1978:21) refers to epideictic displays which occur among animal species, including human beings: in one way or another, animals congregate, apparently to exchange social information.

city. Morgan referred to lower fertility rates in cities compared with rural areas. The cause of this, she guessed, was biological rather than cultural (1976:202). Later in this chapter, the possibility that urbanization lowers fertility in urban dwellers compared with rural populations is discussed more fully.

The optimism of the post World War II years led to visionary, comprehensive plans for towns and cities in which the well being of most citizens was enhanced. However the comprehensive planning approach had serious flaws. The approach was too technically based, too detailed and inflexible, and unable to define desirable long–term goals. For example, technology based city planning may meet not even the social needs of human beings, let alone their biological needs. Constantinos Doxiadis has been mentioned above. Doxiadis was known internationally for his application of science to human settlements, that field being known as Ekistics:

> We often talk about the greater contacts that the big city offers us, but we do not measure these contacts at every unit of the ekistic scale. If we do so we will discover that in units 2 and 3 (room and home) we have fewer person–to–person contacts than we had before, because of smaller families and new sources of information (radio and television), that in units 4, 5 and 6 (that is, in the dwelling group and neighbourhoods) we have far fewer contacts because of multi-storey buildings and the intrusion of automobiles in the human locomotion scale; and that in larger units we have increased contacts because of the news transmitted to us by telecommunication media, the press and so on. In this way we see that we increase our one–way and, by telephone, two–way potential contacts with objects far away from our living area and decrease potential contacts with those close by. Is this reasonable for any of us, and especially for children who cannot cross the street? (Doxiadis 1970:399).

In the Australian Capital Territory, distancing of contacts between neighbours may be occurring in relation to complaints about dogs. Perhaps more than two thousand complaints about the activities of miscreant dogs are reported each year to the Dog Control Unit. Many of these complaints might have been resolved between neighbors. Instead, officers of the Unit played the role of mediators and the complaints were resolved in that fashion (see Appendix).

Steven Bourassa (1989:1–24) used a naturalistic perspective in his attempt to define postmodernism in architecture and planning. According to Bourassa, no major attempt was made to include human biology in landscape theory until Appleton wrote *The Experience of Landscape* in 1975. Appleton's basic thesis was that, if human beings were satisfied biologically, they would be satisfied aesthetically. This theory led to the concept of the landscape as providing habitat for people, and was evaluated by the people living in it according to its ability to provide refuge and prospect.

The postmodern view of vital biological systems is that they are necessarily untidy and not under tight control[67]. Bourassa's synopsis broadly fits the discussion in previous chapters of human home bases. His position

[67] An example is Stearns' recommendation for 'planned neglect' in parkland management so that wildlife could survive in urban situations and meet the 'unvoiced' needs of human beings (1972:261–77).

also reflects one of the main arguments of this thesis — that the natural ecology of the human is an urban environment.

Bourassa pointed out that postmodern views could be categorized as reactionary and celebrating the *status quo*, or as actively resisting modernism. He considered the latter category of views to have the potential to invigorate the urban landscape. The definition of a landscape that he uses is that of the environment as perceived by human beings. He does not consider biological interdependencies between human beings and other animals.

Open public space in the urban environment

The influential World Commission on Environment and Development (1987:235–258) noted that massive increases have occurred in the populations of cities in this century — especially in the cities of developing countries. Appalling social inequities have resulted. The Commission advocated an organic mix of infrastructure changes, plus institutional and community based responses, thus moving away from simple technical solutions such as state provided fully serviced public housing projects for needy families.

The Commission's report reflected a growing general suspicion that the modern technological perspective did not provide a certain answer to problems of urban society. As already mentioned above, this uncertainty grew from the 1960s and often resulted in a move away from the modernist

tradition of confidently rational, large scale urban development plans backed by austere architecture, towards postmodern urban designs which were sensitive to the fabric of urban life, and particularly to traditions and needs. Whereas modernist urban planners regarded space as something to be shaped for social ends, postmodernist urban designers regarded space as independent and autonomous.

Radical development of the postmodern view led to an appreciation of the components of the city as interdependent. For example, the urban planner Ian McHarg published a powerful argument for an organic approach which appreciated that 'we need nature as much in the city as in the countryside' (McHarg 1969:5). For him, open space was not just for 'organised sweating' (McHarg 1969:55), but a place for nature to perform valuable functions in the metropolis. Others argued similarly, for example, that trees could help counter the effects of atmospheric pollution (Detwyler 1972:229–59) even though they might be endangered by that pollution. In the radical view, the city can be regarded as an organism. This view is commensurate with the naturalistic perspective of this thesis. However, it might be remembered that Jane Jacobs (1961:91) warned against depending too heavily on this perspective — for example, she argued there could never be sufficient parkland trees for the trees to act as the 'lungs' of a modern city, and provision of too much open space could lead to further pollution through excessive use of motor vehicles.

It is the underlying argument of this thesis that the biological needs of urban dogs and people are really inseparable and, from the point of view of urban human beings and dogs interacting, public policy about parks is particularly important. Parks provide a place in which both species can exercise and socialize, where dog dung and urine may be absorbed and recycled. Parks and other public places also are where negative effects of dog keeping often become apparent. Thus park design can reflect the way a particular society views its environment and so be analyzed in terms of public policy.

The landscape architect Galen Cranz (1978:9–18) used an historical analysis of the American park movement since the middle of the nineteenth century to develop a typology of parks, and identified four main categories ranked temporally, though there was overlap: pleasure gardens, reform parks, recreational facilities, and open space. He noted that each category resulted from approaches of urban administrators to address the changing problems associated with industrialization and urbanization. The pleasure garden represented an escape from the city and a way of lessening congestion and so the risk of epidemics. These gardens were located at the fringe of the city, were extensive and pastoral, and were areas where the emerging class of factory workers could exercise and indulge family activities. Reform parks were located in the inner city and served as children's playgrounds and as neighbourhood parks. They typically were square, paths were straight and at right angles to each other, and grass became squeezed out by surface material or buildings. Extensive pools were

replaced by swimming pools (public baths) which had public health as their primary consideration. Sport and learning activities were organized.

In Cranz' analysis, as the city became denser and suburbs were developed, recreational parks became more popular. These facilities were parks purposefully designed as outlets for specifically human biological and social needs, rather than as places to commune with nature. These parks became elements of balanced urban design, which included hospitals, schools, shopping centers and so on.

The provision of open space is, according to Cranz' typology, the latest type of urban park. After about 1965, and as pressure for access to open space grew, all spaces which had not been built upon came to be regarded as 'potential sources of psychic relief' (Cranz 1978:16) and characteristically were developed as recreational activity areas for, for example, rock music and swimming pools, to underline the idea of the city as an art form. Cranz pointed out that these quite small parks were called upon to meet the goals originally served by the extensive pleasure gardens.

As an example of the social importance of parks, he reported that the swimming pools of the City of New York were considered by local government authorities to have kept the adolescents there 'cool', and so diverted them from participating in riots that rocked other cities in 1968. There is thus no doubt that Cranz was aware that swimming pools (as one example of public amenities) could serve an important biological function for urban human animals and social control could be achieved through the

biological function. The question he raised was whether the increasingly anthropocentric focus of park design prevented this function being achieved. He considered that public funds directed to defence and highways would be better spent on the development of parks to achieve harmony and lushness in cities.

If arguments such as those described above are accepted, makers of policy about animals in the urban situation need to cater for the animal natures of human beings. The naturalistic perspective advanced in this thesis argues that one way of doing so is to be aware that policies need to reflect the needs of the dogs as biological associates of people, since these associates are part of human nature. If city planners are unable or unwilling to integrate the various urban animals in a city (including human beings) then the city is not providing for the animal natures of people. Narrower viewpoints based, say, only on costs or on the prescriptions of elite groups, too easily favour deletion of public amenities and restrictions on dog keeping. It is forgotten that if dog keeping is endangered, then human nature suffers through circumscription, with potentially serious effects as described in the next section. Later in this chapter the trend in the Australian Capital Territory for open urban space to be restricted is given as an example.

Catering for the animal nature of human beings

In parallel with urban planners, natural and social scientists also have contributed to the postmodern debate on urban policies, especially in North America.

For example, René Dubos was concerned that the animal nature of human beings was being overlooked in urban planning and design. He argued that public policy makers should realize that human beings continue to evolve biologically and to have biological limitations, even if sociocultural adaptations can mask these up to a point. Ironically, he argued, the sociocultural adaptability of human beings was a problem in itself, since adjustments meant that the effects of serious environmental deficits could be repressed until after procreation had occurred. Thus there could not be natural selection of human beings adapted for changes in urban living. As a result, Dubos (1968:91) argued, asocial behaviours following increasing density of the urban situation could persist (for instance, people could habitually withdraw into their own homes, become isolated and self centered), to the detriment of the future of the society and its interaction with other societies. For Dubos, ecological theory indicated that human physical and mental health was dependent on a suitable environment and the modern tendency towards buildings designed to minimize environmental stimulation, could deprive and cripple children residing in them intellectually and emotionally. Dubos considered that 'modern cities, especially the American urban megalopolis, are becoming a nightmare'

(1968:211) because they fail to cater for human biology and culture. Dubos noted that human beings had evolved under the influence of natural stimuli which now were absent. The effect of this absence of stimulation on the human psyche is yet to be known. He considered that urban planners should urgently ascertain 'what human beings require biologically, what they desire culturally, and what they hope to become' (Dubos 1968:213). Dubos believed that human beings could profitably be viewed as social animals living in an urban situation.

Other commentators in the 1960s also worried that community ignorance of the animal nature of human beings would have far reaching consequences. Of particular usefulness for this writer was a series of papers compiled by Paul Shepard and Daniel McKinley (1969) in their book *The Subversive Science: essays toward an ecology of man.* The papers subvert the certainty of modern urban policies by arguing that the policies prevent full development of human nature. For example, one paper refers to a survey of forty urban dwellers, few of whom expected pleasure from city life and were little concerned with the quality of the space. They remembered better landscapes but had become grateful for whatever public space was available (Clay 1969:133–9). The theme of the book was that natural complexity and human intricacy were linked and should be preserved. Among the other papers was that of van Dresser (1969:363–8) who argued:

> it is quite probable that the healthy human psyche requires a proportion of roughage in its figurative diet. We are the heirs of a million years of a generally victorious struggle against cold,

> hunger, difficult terrain, carnivorous cunning; our nervous and glandular balance has evolved under the stress of exertion, effort, endurance. Individuals reared in the complete absence of such stimuli are not apt to be healthy or sane (van Dresser 1969:367).

van Dresser was particularly disparaging of the 'toyland' of suburbia: he wrote of the car as a 'womb with a view', and of some urban environments as 'blenderized'. The psychologist Stephen Kaplan (1972) reiterated van Dresser's point, when he noted that human beings had evolved to meet natural challenges which now are being modified by various types of technology.

The naturalistic perspective of this thesis has viewed human habitation as an ecological niche which became available to *Homo sapiens* and the evolving dog many tens of thousands of years ago. The niche has become the concentrated and numerous collections of people found in the urban situation. Restriction of physical space through over crowding can create stresses in populations of mammals but it may be that human animals 'can retreat into the world of ideas' (Calhoun 1971:330) and so have evolved a conceptual way of crowding together productively despite a species history of wandering bands of gatherers and hunters. The dog may be an aid to urban dwellers for conceptualizing space. This proposal is used to put forward a naturalistic argument with broader connotations than local urban animal management to hint at the dangers of purely anthropocentric policy making.

The proposition is dependant on John Calhoun's (1971:329–387) paper, 'Space and the strategy of life' which he delivered as a 'Frontiers of

Science' lecture to the American Association for the Advancement of Science in 1968. Calhoun addressed space as that which contains resources which must be aggressively defended and yet which must be shared with other groups. The process of balancing these two imperatives develops the individual's identity:

> This process of developing an identity with surroundings initiates the formation of a second kind of space within which we spend our lives. The experience of things becomes transformed into concepts about them until evolution produces a conceptual space in which values are related to relationships between abstract ideas rather than to ways of behaving in relation to physical situations (Calhoun 1971:329).

Similarly to van Dresser's description above, Calhoun wrote of the nature of life being states of gratification and frustration which reached a balance at an optimal group size, which tends to relate to the species. The group splits when resources become limiting and, when no further splitting is feasible, disease, predation and intra and inter–group stresses act on birth and death rates to bring the group back to optimal size (Calhoun 1971:356). The capacity of human beings to conceptualize space enabled them as a species to operate at group sizes that were not as directly limited by physical space as is the case with most other animal species.

It will be remembered that the naturalistic perspective proposed that human home bases which had evolving dogs in them on average survived where those which did not, did not, and that the presence of evolving dogs allowed variants of *H. sapiens* with improved capacity for speech to survive. This led to better organized home bases in which evolving *H. sapiens* and

the evolving dogs associated with them survived more frequently, on average, than, say, rather disorganized bases of Neanderthal or other *Homo* species. Part and parcel of this process must have been a dawning appreciation by *H. sapiens* of the dog as watch dog (and presumably for the evolving dog a dawning perception of *H. sapiens* as a member of its group). This is conceptual space. In Calhoun's terms, *H. sapiens* could read a dog's behaviour and be prepared for the appearance of an intruder, rather than reacting to the intruder itself. This proposition now applies to the urban dweller who is alerted by the dog that a stranger or a friend is at the other side of the front door, and it also applies to the urban dweller whose enjoyment of an early morning walk is enhanced by the behaviour of the associated dog as it, too, enjoys the experience.

The naturalistic perspective is taken further in later paragraphs to suggest that the crowding together of *H. sapiens* may reduce fertility and be an evolving biological response to vastly increased numbers of people in the world. The conceptualization of space allows such crowding to occur more amicably than might be expected. It is admitted that to put forward the dog as a means to global birth control is highly speculative. The matter is raised to show that local urban animal management, reflecting as it does the attitudes of human decision makers to the natural world, may have wider implications.

To reiterate John Calhoun's argument, animal species have optimal group sizes and the preservation of these optimal groups acted to control

total populations in a given range of territory. In the case of human beings, however, as the total available area became filled, some group or groups evolved a new kind of conceptual space equivalent to the needed physical space into which it or they could move. This space probably can be conceived simply as the acquisition of values and codes which defined roles.

According to Calhoun, increases in our facility for conceptualizing space must keep abreast of increases in total population, or stress induced pathologies will arise. He extrapolated from evolutionary theory to suggest that, without increasing conceptual space but if numbers continued to increase, *Homo sapiens* would gradually become no longer sapient — most individuals would become 'less aware of less and less' (Calhoun 1971:377). Dubos (mentioned above) feared this process as capable of asocializing people. With human ability to conceptualize space, however, Calhoun suggested that communication and sociopolitical networks would allow each individual to have a role and the same level of interactions as if in a hunter–gatherer group of twelve adults and associated children. This he regarded as a basic unit of human grouping.

The capacity to conceptualize space developed in stages which can be described in cultural terms. It may be remembered from Section two in Chapter 3 that a naturalistic perspective illuminates a biological basis for culture. According to Calhoun, the first revolution in the conceptualization of space began with the birth of tradition about 40,000 years ago. Calhoun

forecast the present stage in the conceptualization of space would be the communication–electronic revolution. In this stage the human brain cortex is assisted electronically to condense the huge amount of information available. In other words, electronic storage devices such as computers become prostheses. During the communication–electronic revolution Calhoun assumed world population approaches five billion people.

Calhoun (1971:37) predicted that the revolution which will follow the current communication–electronic revolution in the conceptualizing of space will be an appreciation of the inter–connectedness of human activities and all of nature. He called this the compassionate–systems revolution. In this revolution he visualized all of nature and all of human activity as occurring in inter–locked subset systems. Although each subset might have different values, because the process within a subset is affected by the process within other subsets, in all subsets there will have to be a realization of those values held in the other subsets, demanding a compassionate perspective. Perhaps Calhoun is predicting a change toward an appreciation of complexity, away from a desire to categorize and exploit which characterized the scientific–exploitative revolution (which he argued predated the communication–electronic revolution). The conceptualization of our place in the natural environment would be necessary to permit a healthy stable human population of around nine billion in 2018 –2400 AD and fits the requirements of the compassionate–systems revolution.

Calhoun's perspective is of particular relevance to this thesis since he used a strongly naturalistic and evolutionary logic with which to regard the human animal. It may be seen that the timing of the first conceptual space revolution (the traditional–sapient revolution) which Calhoun proposed fits this thesis' train of thought quite well. When our direct ancestors became conscious that they were sharing sensory labour with the canids in human habitation they may have made one of many leaps into space, away from the more strictly biologically conditions in which the evolving Neanderthal were snared.

Dogs may continue to add to the conceptual space of modern urban *Homo sapiens*, for example, through economically rational associations for personal security or less obvious rational relationships for companionship. Dogs may vicariously assist us to appreciate the environment as they alert us to events we cannot detect, or simply by sharing and enriching the enjoyment of a morning walk, as already suggested. Calhoun's hypothesis lends more support to the argument of this thesis than do the simpler instrumental proposals that pet keeping is an adaptation for survival in the urban environment (Levinson 1975:8–18; Serpell 1986:119; Herzog and Burghardt 1987:145–6; or McBride 1991:93–105), since it explains why the dog, in particular, provides this service. Certainly, acceptance of Calhoun's hypothesis suggests that problems arising from the presence of animals in the urban situation cannot be dealt with simply by declaring those animals to be the property of 'intolerable' and even 'sinful' irresponsible owners (Allen and Westbrook 1979:3, 165).

As already mentioned, the modern sanitary city in developed countries probably would not support a viable population of dogs unless these were owned or assisted by someone. Michael Fox (1978:67) studied a group of stray dogs in St Louis over a period of 12 months and, although he remarked on the adaptability of the dogs, he doubted that they could succeed in raising a litter of pups under such circumstances. Alan Beck and Aaron Katcher (1983:244) on the other hand found that in Baltimore many people put food scraps out for dogs[68] that had no owners. In Australia food is placed for cats around office buildings and factories, and the feeding of urban wildlife is popular.

In India, similar compassion may be observed, even though *per capita* income may be much less than in developed countries. The writer observed food placed for animals in New Delhi, as has been mentioned, and the case of 'Grumpy' the dog was described in Chapter 4. In Madras and Jaipur, street people were observed caring for pups. Fox (1980:69) commented on the tendency of people in India to feed dogs which were not owned but which were, nonetheless, part of the village. He considered that *ahimsa*[69] explained the villagers' attitude:

> these people accept the animals because they were born and raised together. The dogs are part of the same ecosystem, both physically and psychologically. But they are not loved, and there are insufficient resources for indulging them with food and

[68] Haspel and Calhoon(1990:155–61) studied the feeding of unowned cats in Brooklyn by people who often were poor, and considered the relationship to be one of interdependency.

[69] *Ahimsa* was mentioned in Chapter 1.

> medication when needed. The dogs, like the people, fend for themselves peaceably and usually democratically.
>
> This kind of relationship was perhaps the first social relationship that early man had with an animal. Archaeological evidence points to the dog being the first animal to become part of the family of man. But in India and elsewhere the dog has not crossed the threshold to become an integral member of the family. Historically the transition from outside to inside the home occurred slowly (Fox 1980:70).

Human beings may be compassionate to animals with which they associate. In connecting with animals in this way they develop the conceptual space to which Calhoun (1971:329–87) refers and aid their own survival in a world where physical space per person is less. Similarly, public policy makers who recognize the subjectivity of urban animals about which they make policy, may be aiding the survival of their own societies. In the context of this thesis such compassion may be regarded, at least in part, as having the evolved biological dimension of interdependency, even if Fox's inclusion of the dog as 'part of the family of man' cannot be entertained because of its anthropocentricity.

Paul Shepard's (1973) opinion of the domestic dog has been mentioned in Section two of Chapter 3. Shepard is an example of a naturalistic thinker who is not supportive of dog keeping in the urban situation. For Shepard, the agricultural revolution some 12,000 years ago marked the beginning of human attempts to humanize the environment, including the animals present in it, with the result that natural balances were disturbed. Both the environment and the human spirit began to be degraded. He was thus disparaging of pet keeping and especially of the keeping of

dogs (Shepard 1973:265), and considered that the domestication of animals had reduced their naturally rich repertoire of behaviour to the merest crude essentials. Shepard had a view of the human animal as combining the elegance of primate sociality and the sharp cunning of a carnivore (Shepard 1973:101) which he felt was being blurred under an agricultural philosophy. He commented actively against anthropocentricity as a perspective on nature and, like van Dresser (mentioned above), against the tendency of human beings to insulate themselves from the environment. For Shepard, the humility necessary for the survival of the human species could be achieved by an appreciation of, and organized return to, the hunter gathering lifestyle. Shepard was a well known commentator on environmental concerns, and his proposition in *The Tender Carnivore and the Sacred Game* (Shepard 1973) is attractive and understandable, given his impatience with materialist exploitation of the environment. Nonetheless, Shepard (1973) tended to cast human beings as separate from, though affected by, the environment and so his argument lacks the evolutionary underpinning which this thesis requires as a basis for the naturalistic perspective in urban animal management. The cultural effects of the agricultural revolution dominated his theory. As already mentioned, his earlier work on human ecology, *The Subversive Science: essays towards an ecology of man* that he edited with Daniel McKinley (1969) has, however, informed this thesis.

Among the needs (perhaps, as an aid to conceptualizing space) of people is the need to define territory, by hedges, walls and fences: these artifacts help to reduce the stress of crowded living (Stearns 1972:274). Yet

in some Communist communities, reportedly, the fence was an illegal statement of ownership, a 'dangerous note of individualistic non-conformity' (Jackson 1969:165, 167).

The overt study on a national scale of the human being as a biological animal appears to be very unusual, perhaps because of concerns about social Darwinism as discussed previously. However, Polish policy makers have taken the animal nature of human beings as a serious topic for study. In the journal of the Institute of Human Ecology (of the Polish Academy of Sciences), *Studies in Human Ecology*, Torsten Malmberg (1990:95–100) partially echoed Calhoun's idea of conceptual space, though he called it 'phantasy territory ... making it endurable [for people] to live in small, crowded, collective spaces' (Malmberg 1990:99). Another Polish contribution was that of Anna Siniarska et al. (1992:335–58) who discussed the biological status of some human populations in Poland, using large amounts of data collected over considerable periods (in 1958–1968, 1975–1982, and 1975–1988). Their analysis suggested that higher reproductive losses in people occurred in towns, chiefly small industrial towns, compared with rural centers. They found contraception was used more as industrialization progressed but they considered that urbanization had a greater depressing effect on fecundity than did industrialization. They found that urban communities compared with rural communities had fewer children within a family, higher natural abortion rates, and higher infant mortality (estimated during the first 24 hours after birth).

Their data are not easy to dissect but consideration of the discussion in this section suggests one inescapable area for speculation: is urbanization a survival technique of the human species to control its population and is conceptual space the evolved mechanism by which crowding can exert its biological effect without the widespread social pathologies which affect other species when they become over crowded? If, as suggested further, the companionship of the dog assists some human beings to conceptualize space, public policies addressing urban problems might on rational grounds view animal companionship and animal keeping in a positive light, since these factors may secondarily affect human birth rates. Even if a less radical point of speculation by several other writers is repeated here — that pet keeping is adaptive to urban stresses — then public policy makers would appreciate that urban dogs may at least ameliorate some of the asocializing effects of dense urbanization which Dubos feared:

> Cultural evolution has long been of much greater importance than biological (genetic) evolution, but this does not mean that the biological evolution of mankind has completely stopped, or that it is irrelevant to cultural evolution (Dubos 1968:57).

It may thus be that good urban management has a wide reaching biological purpose in the human community.

Very important sociobiological issues have been raised in the above paragraphs. In Chapter 2 the idea that public policy is a survival tool for the human species was introduced. Good public policy making is thus important particularly when policy making is about our place in the environment. The postmodern discourse has shown that modern certainty is not enough,

especially when it results in cities which do not meet the biological requirements of human beings. It has been argued here that an evolved biological requirement of human beings is an association with dogs. Therefore policies which forbid or do not cater for this requirement will be to the detriment of the human species. In the short term, policies which do not cater for dogs will not be able to cater for the well being of people, simply because the two species have similar biological requirements. In the longer term, policies which cannot cater for the integration of the urban dog may be removing one element from the urban environment which helps us to conceptualize space and so survive in the face of diminishing per capita physical space. The presence of urban animals such as the dog may on balance assist the harmonious crowding of people by enhancing their conceptualization of space. Crowding may lower the fecundity of these urbanized people and may be one, evolved, step towards stabilising the number of this species on this planet.

Applying a naturalistic perspective in urban animal management

The discussion in Chapter 3 on the evolution of dog control legislation in an Australian case study (the Australian Capital Territory) showed that the animal nature of even the dog tends to be overlooked by legislators, as there has been a trend to objectifying the dog as a pet in private ownership. The argument of co–evolved inter-dependency was advanced in this thesis to establish a basis for an appreciation of the animal natures of the human

being and the dog as subjects of public policy. The certainty, even smugness, of the stereotypical *responsible pet ownership* to which the complexity of the human–canid relationship is reduced, is arguably a block to creative public policy making. There is ample evidence, dealt with in Chapter 4, of a complex relationship that cannot be explained away as pet ownership.

Among those concerns is urban animal management. For example, Councilor Peter Woods, when president of the Local Government Association of New South Wales, wrote that urban animal management was a significant community issue. He referred to the fragmentation of the community over concerns such as dog attacks on children and destruction of fauna by cats. He admitted that local governments had taken a rather limited view of animal control or dog control but were not alone in this regard. He noted that existing legislation was not achieving its objective of control and, as a result, local councils were inundated with complaints about barking dogs, the fouling of footpaths and parks by dogs, and attacks by dogs on children, often with horrific results (Woods 1993:38–44).

There is no doubt that the continued integration of the dog in modern urban living presents a problem for policy makers. It has been argued in this thesis that it makes anthropocentric sense to address the problem seriously, because it is in the interests of human well being to do so. However it has also been argued that the dog cannot be dismissed easily as an object in human ownership to be controlled by legislation because the relationship

between people and dogs is evolved and complex. One way of addressing the dog as a subject in public policy is to use a naturalistic perspective.

Innovative thinkers in Australia have not flinched from using a naturalistic perspective. Examples are many. A few are mentioned now since they, in particular, have influenced the writer: Michael Banyard, when President of the Australian Veterinary Association and afterwards, actively sought to ventilate public policy issues by convening a well attended series of national conferences on urban animal management in which diverse views, formal and informal, can be canvassed (see, for example, Banyard 1994:6). Richard Murray has argued for over a decade for more effective policies in urban animal management and promoted the idea of combining an understanding of the biology of the dog with innovative policies in municipal pet management (see, for example, Murray and Penridge 1992, 1997). While Murray has an instrumental view of the dog that is not consistent with all the arguments of this thesis, there is no doubt that Murray's application of the scientific method and his charismatic sincerity have inspired urban animal managers in Australia.

Virginia Jackson and Robert Holmes harnessed skills in architecture and landscape design with knowledge on animal behaviour to seek to maximize the amenity which dogs can provide for people in urban situations (Harlock Jackson Pty Ltd, Goad Fink and Holmes 1993). Garth Jennens has broadened the meaning of responsible dog ownership by involving the community in the discourse of control with 'AMREX', an integrated system

for companion animal management (1994:79–91). Kirsty Seksel (1993a:157–74;) accepts the dog as it is and promotes the early training and socialization of puppies so that they are not fearful and difficult to manage as adult dogs. Jonica Newby has embraced the potential of a naturalistic perspective to shed light on human–canid relationships in her book *The Pact for Survival* (1997) and in an Australian Broadcasting Corporation, Radio National Science Show series entitled *Animal Friends* which first went to air in February 1997.

To demonstrate the utility of a naturalistic perspective an example is given below. The example chosen is one of the most intractable problems in urban animal management — dog dung in public places. The orthodox approaches to this problem include banning dogs from public places, such as beaches; requiring that the owner pick up the faeces of the dog and return them to the abode of the dog; enforcing strict leash laws and running community awareness programs which attempt to shame dog owners into compliance since enforcement is rarely practicable. These approaches are adversarial and regard sections of the community as *others*.

Early chapters have described how regard for the dog has swung between the poles of an unclean scavenger and a pampered plaything. Urbanization in western cities appears to focus the public administrator's attention on the dog's ability to generate dung. The impact of the dog on the urban environment has caused such dramatic comments as those of Annelda Baetz, an animal control consultant from Texas, who was invited to address

the first national conference on urban animal management in Australia, held in Brisbane in 1992. Baetz spoke on 'Why we need animal control':

> Deposits of 500 000 kilograms of dung are equivalent to having an additional four million people in the environment. The fact that this pollution is tolerated in our conservation conscious society is nothing less than obscene. Will this pollution continue? Will it ultimately bury us? (Baetz 1992:31).

Murray and Penridge (1992:23), in a handbook for urban animal managers in Australia, mentioned above, quoted figures from Baxter (1984) that one thousand dogs will generate some 273,750 liters of urine and 63,875 kilograms of dung in a year (or approximately 175 grams of dung and 750 milliliters of urine per dog, per day). Michael Fox (1980:79) estimated that a large dog would pass 340 grams of dung on average in a day. Fox also noted that, when the 'pooper–scooper' law was introduced in New York City in 1978:

> There's no question that clean streets are healthier for people as well as for their dogs. But there was one consequence that shocked humanitarians. When the 'pooper–scooper' law came into effect, the local pounds all of a sudden were full of abandoned dogs. Hundreds of pet owners, it seems, would rather get rid of their dogs than clean up after them (Fox 1980:79).

The comments above stress the gross contamination of the environment without commenting on the shrinking nature of space in the urban environment in question. That the environment will shrink is accepted, in just the way which was criticized by the planners mentioned earlier in this chapter. A naturalistic perspective is less bleak.

A dog may pass around 175 to 340 grams of dung per day, as referred to above by Murray and Penridge (1992:23). This might be taken as

an average of, say, 250 grams per day per dog, or about 90 kilograms of untreated dung per year. A leading Australian manufacturer of garden fertilizer consisting of dried chicken dung recommends that the fertilizer be spread at the rate of 10 kilograms per 100 square meters of top dressed lawn every six months. Assuming a weight reduction through drying of 2:1, the dung of an average dog distributed in the same way over about 200 square meters of grass in a year, that is, over a strip 10 meters by 20 meters, would have no more or less environmental impact than would the actions of a meticulous gardener top dressing a lawn with the fertilizer. Let us take a city such as Canberra in the Australian Capital Territory as an example. In 1993, Canberra had a population of 295,000 people in 102,099 households of which 38 per cent kept dogs (Australian Capital Territory 1993b). The city had public land of 760 hectares of grassland that could absorb the dung of resident dogs with no more environmental hazard than that already posed by civic minded gardeners. If the dung could be distributed evenly over this area, the grassland may arguably benefit.

In an attempt to gain an appreciation of the environmental loading of dog dung per dog, the writer weighed the dung of the family dog Mezzeh, which at the time was a dog of medium size, weighed 29 kilograms and was fed approximately 460 grams of canned dog food, 60 grams of dried food and a liberal amount of household food scraps each day. Mezzeh also occasionally scavenged in public places. Whenever Mezzeh was observed to defaecate, the dung deposited was collected and weighed. Thirty samples were collected during the period from 28 May to 6 October 1995. Samples

were collected in a common plastic shopping bag folded over the hand, and were weighed on a household scale reading 0–500 grams. Most samples were collected in the morning, which is the time that Mezzeh was taken for a walk. The results of the collections are given in Table 4, overleaf.

The average weight of thirty faecal samples was 65.9 grams per sample, with a standard deviation of 27.1 and the Student–t test shows that the average weight of Mezzeh's faeces per deposit can be stated with 95 per cent confidence to be between 56.2 grams and 75.6 grams. If it is assumed, on the basis of observation, that Mezzeh defaecates not more often than twice per day, the figures widely quoted for environmental contamination from dog faeces are over estimates.

The above comments illustrate some points that will be debated in this section. These are: the belief that if an issue can be quantified it will in some way be explained; that human beings have first priority in the 'use' of the environment; that dog dung is a threat to human and animal health; and that the issue of dog dung in the urban environment is a function of dog ownership.

There is no doubt that the issues raised are valid concerns for public administrators and should be addressed seriously. When the issue of problems attributed to the urban dog arise, however, often value laden judgments are made. Michael Fox, though drawing attention to the environmental effects of dog dung, also noted: 'the dog should not be considered a pest to be expelled from society' (Fox 1980:80).

Table 4: **Samples of dung deposited by Mezzeh**

Date 1995	a.m./p.m.	Grams*	Date 1995	a.m./p.m.	Grams*
28/5	a.m.	47.3	8/7	a.m.	79.3
28/5	p.m.	27.3	9/7	a.m.	47.3
29/5	a.m.	54.3	11/7	a.m.	142.3
30/5	p.m.	53.3	20/7	a.m.	58.3
31/5	a.m.	42.3	26/7	a.m.	58.3
2/6	p.m.	67.3	28/7	a.m.	99.3
3/6	p.m.	42.3	30/7	a.m.	79.3
5/6	a.m.	67.3	6/8	a.m.	59.3
6/6	a.m.	66.3	13/8	a.m.	152.3
16/6	a.m.	65.3	6/9	a.m.	54.3
27/6	p.m.	62.3	22/9	a.m.	32.3
30/6	a.m.	84.3	23/9	a.m.	56.3
4/7	a.m.	68.3	30/9	a.m.	89.3
5/7	a.m.	59.3	2/10	a.m.	59.3
7/7	a.m.	50.3	6/10	a.m.	52.3

* This weight is less the weight of the plastic bag, thirty bags having a weight of 230 grams, or an average of 7.7 grams per bag.

Fox's views may be contrasted with those Allen and Westbrook (c1979:3, 165) mentioned. Their attitude may be the product of an instrumental view of the urban dog that arguably dominates western urban animal management. As a result, the defaecating dog is seen as the surrogate for its owner. In extreme cases, the dog's dung may be equated to human dung, as this extract from 'Pet Topics' written by a veterinarian for the Victorian newspaper *Herald Sun* shows:

> It is socially unacceptable to not clean up after your dog. It may well be natural for a dog to eliminate. But if it does, in public, owners must remove the mess. To not do so is as bad as if the owner themselves [sic] had made the mess and then walked away from it ... The problem can be solved by training the dog to defecate at acceptable times and places (Hill 1994:18).

Clearly, the veterinarian David Hill does not believe in viewing dung as dung, but as 'legal, social and medical problems' (Hill 1994:18).

The *Sydney Morning Herald* newspaper editors expressed a similar attitude when in a front page expression of histrionics they claimed:

> The city's parks and streets had effectively become public toilets for dogs, and stormwater drains had become the city's canine sewerage system (*Sydney Morning Herald* 12 November 1994:1).

The story continued over three pages of a Saturday edition. Clearly the editors considered the issues to be of sufficient importance to merit many very expensive column inches of print, but did not devote any serious analytical thought to the matter: the newspaper editors did not seem to consider that the problem probably reflected diminishing public space for its tax paying people. No questions were asked of public administrators as to

why this could be so. The editors did not ask why the residents had the dogs in the first place. Instead, dog keepers were *othered.* 'I wouldn't let my kids poo on the nature strip, so why should I let my dog?' said one woman quoted in the article, while a beleaguered municipal official said '... the council was hamstrung by a lack of resources and difficulties associated with enforcing the Dog Act' (*Sydney Morning Herald* 12 November 1994:1, 6, 7).

The discourse of control tends to regard dog dung as a social problem: as a symbol of trespass, of disease and of rebellion by the dog owner. Pooper–scoopers and emphatic legislative controls become logical pathways until the point is reached where urban dog keeping becomes banned altogether. In terms of the arguments of this thesis, such a state is not commensurate with human well being, or even survival. A naturalistic perspective illuminates public concern about dog dung as a danger signal: the urban environment may no longer be able to provide for the needs of human beings and for their socialization.

It would seem more productive to regard dog dung naturalistically, that is, as one of the products of human–canid association, the nuisance value of which relates primarily to the location of the dung. Some examples of this way of thinking are given below.

In 1988, one year before self-government in the Australian Capital Territory, the Commonwealth Government required the production of a Territory development plan. As a guideline, four hectares of urban open

space per one thousand people was considered desirable for human well being (Interim Territory Planning Authority 1990:22). That is, under this guideline, some 1,200 hectares of open space would be provided for the urban dwellers of Canberra, in addition to broad acre provisions on the periphery of the city.

This guideline thus can be seen to provide amply, in theory, for the absorption of environmental impact of dog dung. On average, the space provided equates to one hectare of open space per 86 households which would, on average, keep 32.7 dogs. Thus, in meeting optimum human needs in a garden city, there would be 305.8 square meters of urban open space provided under this guideline per dog, much more than the 200 square meters of public space calculated above to absorb faeces of an average dog over a year.

In practice, however, the Interim Territory Planning Authority considered:

> In the urban areas, a guideline for the provision of open space has been 4 hectares per 1000 people. In the light of evidence of over-provision of open space on this basis and the increasing cost burden of maintaining open spaces, there is a need to assess the use of land which exceeds the guideline and to develop a mechanism to ensure that open space is provided in a way which meets the community's aesthetic and recreational requirements but which is sustainable in budgetary terms (Interim Territory Planning Authority 1990:22).

The 'evidence of over-provision' of space was not provided by the Authority, but the tension between services and the costs of providing them carried through in the Territory Plan which came to be developed:

> The existing high standards for the provision of open space will be maintained through the creation of an open space network, including the reservation of appropriate land for recreation.
>
> Open space will be planned on a hierarchical basis related to urban structure, accessibility and function; and developed as an integrated system that contributes to the quality of urban development, is cost-effective to maintain, and assists in the effective management of stormwater (Australian Capital Territory 1993a:18).

The Territory Plan included permission for urban consolidation in existing residential areas. Under this policy relatively less urban open space per person may be available, though the actual attrition has not been calculated. The importance of cost considerations, however, suggests it would be naive to expect that open urban space is anything but a diminishing resource for the urban person, not to mention for the natural absorption of dog dung.

A naturalistic perspective does offer options available to reduce the impact of the dung. For example, Harlock Jackson et al. (1993) provide an overview of options for integrating pet animals in new residential developments. They stressed that:

> *as housing density increases so too does the need to pay attention to breed choice, specific design features, management, training and environmental enrichment* [for the pet animal] (Harlock Jackson et al. 1993:18, their emphasis).

Although it is not practicable to repeat all their recommendations, in brief they argue that private open space should be maximized in house block layout; the housed dog should be able to see out of the block (to provide mental stimulation and minimize nuisance from barking by a bored dog) so fences should be of open design and located to the front of the block; garden beds may be used for turning in dog dung and communal garden beds may

be provided in high density residential developments. They recommend that public parkland be designed to merge with daily human usage and thus be shaped linearly and so as to connect, for example, shopping or transport centers with residential clusters. Thus exercise for both human and canid residents is facilitated and combined with other functions of daily living. Such parks mean that the dog would 'empty out' before reaching the shopping center. That is, if the dog keeper took the dog for a walk to the shops it would most likely have defaecated before reaching the paved area that characterizes most shopping centers. This can be contrasted with the situation where the dog is taken by car, expects to be going to a park but instead is taken to the shops, and there defaecates on the paved area, creating a nuisance for a large number of shoppers. Harlock Jackson et al. also noted that temporal layering of park usage, such as permission to have dogs off leash between 6 p.m. and 10 a.m., maximized park utility while minimizing conflicts in use. They also suggested the designation of free-running areas for dogs in public parks as a way of spreading the utility of public parks.

Although it has been made clear in early chapters that the origin of the dog is unlikely to be the northern wolf, in fact its behaviour is in many ways very similar, as Scott (1967:373–83) showed when he compared 90 behavioural patterns of dogs and wolves and reviewed commentary on dog and wolf behaviour. He concluded that dogs use urine and faeces to advertise their presence, rather than to prevent the entry of another dog. Mech (1970:107) studied wolves and reviewed the literature on scent

marking. He concluded that urine marking of conspicuous objects above ground level advertised the presence of the wolves, and the freshness of the scent indicated the time which had passed since marking.

Marking objects above ground level presumably optimizes the spread of the scent by air currents. The writer has observed a succession of dogs tending to defaecate on tufts of grass. Male dogs tend to lift one back leg to urinate, presumably to mark some distance up the trunks of trees and other objects. This behavioural pattern could be used to good effect by public administrators who organized parkland such that areas of grassland were left rough[70] where people would tend not to walk but where dogs would tend[71] to defaecate and urinate. Since mechanical mowers are less likely to contact the dung if set high, there is less risk of perceived infection of the mower operator by whatever zoonotic diseases may be present in the dog dung.

The quantity of a dog's dung must be related to the amount it is fed. Dogs in an affluent society are likely to pass more voluminous faeces for their sizes than the starving dogs in cities in much of the world. The content of dung must be related to the dog's diet and this may influence its biodegradability and aesthetics. For example, some commercial dog foods

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[70] This is a similar suggestion to Stearns' advocacy of 'planned neglect' in the design and operation of parks, mentioned in a previous footnote in this chapter (1972:261–77).

[71] More and more dogs are born and reared under intensive conditions by breeders in urban areas, due to regulations which prohibit uncontrolled breeding. Those dogs which are reared in pens may become habituated to defaecating on a sealed surface such as concrete.

reportedly produce dung that has a less noticeable effect on the environment than others (Jenny Wingham pers. comm. 1994). Doug Trehane, a veterinarian, was of the opinion that a diet which included raw meaty bones created more easily biodegradable dog dung:

> Question: What turns white and stops smelling after four days? Answer: Your pet's poo when it's on a natural diet! (Trehane 1994:693).

Other commentators have recommended biological reduction of the dog dung itself. Generally speaking, these recommendations have not been based on scientifically derived data, but make logical sense. For example, composting of the dung or its reduction by earthworms has been suggested.

Obviously, there is room for research into this area. The writer observed in Jaipur and other parts of India which he visited, that the food available to most dogs is minimal and often only of vegetable origin, since meat is not a major part of human diets. Carrion and human dung also may be available to dogs. Human dung, rather than dog dung, was much more commonly observed in open spaces. Except in specific circumstances, such as near railway stations, human dung was observed to be neither voluminous nor odorous, perhaps since most human inhabitants also had a moderate and chiefly vegetarian diet. During the writer's short visit to India, nowhere did dog dung appear to be an important public issue. Clearly, the more a dog is fed, as by 'responsible' dog keepers in affluent societies, the greater will be the volume and hence the impact, of its dung.

A naturalistic perspective includes ways of reducing urban dog dung by other natural processes. Composting of the dung and also feeding it to garden worms has been mentioned. Of particular interest to urban public administrators may be the idea of introducing dung beetles to grassy public open spaces. These insects are varieties of scarab beetles which feed on the contents of dung and also bury it for their young. Australian scarab beetles have evolved to utilize the dung of marsupials efficiently, but are less efficient at using the dung of introduced animals such as the dog. Between 1968 and 1993, a program was implemented by the Commonwealth Scientific and Industrial Research Organization to introduce from other countries scarab beetles which can use the dung of, particularly, sheep and cattle, to counter the effects of flies such as buffalo flies, blow flies and other flies which are important pests and breed in ruminant dung. Reduction in the numbers of these flies has economic and environmental benefits for agriculturists and also for the general urban population in reducing nuisance effects of certain flies. Once introduced, the beetles establish populations, the adults flying from dung deposit to dung deposit where feeding takes place and eggs are laid. Some of these introduced beetles can use dog dung. Thus, the dung beetle introduction program may have relevance to urban policy makers. Since much of the dung is rolled into balls and buried underground by the beetles as a food supply for their larvae, soil structure and nutrient levels are improved. The presence of the beetles is claimed to complement the activities of earthworms (John Feehan pers. comm. 1994; see, for example, *The Canberra Times* 3 January 1995:9).

The writer was instrumental in raising the idea of using dung beetles to bury dog dung in municipal parks, and encouraged John Feehan, a principal of Soilcam, a company which collects and distributes dung beetles, to contact city councils (Paxton 1994c:1–2). In 1995, the Waringah Shire Council in New South Wales became the first municipal council in Australia to release dung beetles in public exercise areas for unleashed dogs. The beetles augment an arrangement the Council has for the centralization and collection of dog faeces in parks using a 'Pooch Patch', which is a short post surrounded by sand and adjacent to which is placed a litter bin. In these bins, the Council collects 120 kilograms of dog faeces every week (Anon. 1996:1–2). The 'Pooch Patch' is similar in principle to areas provided for dogs to defaecate in parks in affluent European countries (see, for example, Jowsey 1992:193–208; Leather 1994:7–21). Individual householders in Australia already can purchase small septic systems for the disposal of their dog's faeces.

Dog faeces and human faeces are problems associated with concentrated urban living. A massive infrastructure is developed even in poor cities in an attempt to deal with the latter. Much less thought has been given in Australia to the former. Ultimately, unless dogs become banned altogether, affluent countries may see in their cities the construction of apartments with toilet cubicles to cater for dogs and cats (Levinson 1975:155–9).

With a naturalistic perspective the need by people for dogs is recognized. The perspective explains that people need access to dogs because of the closely evolved history of people and dogs. The dog needs human habitation and social interaction, preferably with other dogs but it also has evolved a relationship with people. In a positive climate towards dog keeping in the community, sharing of dogs is possible, thus providing access while reducing numbers of dogs in public places. The following anecdote serves to make this point and to conclude this chapter: a university student visited the writer in Canberra to obtain material for an essay. She mentioned that she was being annoyed during the day by a neighbouring dog that barked all the time its owners were away from the house. In desperation she visited the neighbours and asked if she could take the dog for a walk while they were at work in the hope that the activity would satisfy the dog and she could study. The neighbours refused. Why? Did they think their rights to the dog would somehow be compromised? Did they think there would be public liability issues to be considered? They simply did not say, and the dog went on barking.

The next chapter concludes this thesis by suggesting that a naturalistic perspective offers a means by which the basic attitudes of public policy makers and the public to dog keeping can be re–assessed. Under such circumstances the university student might have received a more welcoming response from her noisy neighbours.

Chapter 6

Conclusion

The thesis has built a case for including a naturalistic perspective among the models for making policy on urban animal management. The naturalistic perspective used is based on Charles Darwin's theory of the origin of species through natural selection. This theory forms a well established line of argument that has been built on by many important contributors to the literature on evolution. Their ideas have been selected and incorporated into the theoretical framework of the naturalistic perspective developed in this thesis. Briefly, these ideas include the concepts of the extended phenotype; of punctuated equilibrium in evolution and the accumulation of adaptations with potential for expression (exaptation); and of survival of human groups through a process of co–operation to compete in a hostile world.

It was hypothesized that people and dogs are urban animals that have co–evolved in a long lasting association. That association is complex and subjective because it includes a dimension of biological interdependency. The naturalistic perspective, or model of thought, developed here has the following main pillars: human beings and dogs are regarded as animals whose natural habitat is the urban situation; their relationship has evolved and is closely woven; human beings and dogs interact within this relationship, though they form separate societies. The major objective of developing this model was to add to the theoretical base of urban animal

management, where the orthodox discourse was argued to be limited to control of the dog as an object in human ownership.

As well as being aided by the conceptual tools mentioned above, the argument in the thesis was supported by recent evidence that the evolution of *Homo sapiens* occurred on a much shorter scale of time than previously believed. In only the past two decades or so, new ideas have arisen on human evolution which have turned established ideas on their heads. Evidence from palaeontological data and the results of sophisticated biochemical and biophysical tests now is that the current stage of human evolution occurred over several tens of thousands of years rather than over the 'millions of years' which are so hard to conceive by lay persons. A few researchers have used biochemical and biophysical tests to examine the origin of dogs also. These tests showed that a group of wolves does appear to have passed through an evolutionary bottleneck on its way to becoming dogs. Its passage matches the time when home bases of *H. sapiens* might have been emerging as novel ecological niches. There is discussion in the thesis of these tests and also of palaeontological evidence of remains of canids associated with early human remains. The likely juxtaposition in time and place of human and dog evolution assisted the argument developed for co–evolution of the two species.

In line with the comments above, the concept of domestication by people of the dog was questioned and a more specific argument was developed in Chapter 3 that the southern wolf adapted to a new ecological

niche (itself gradually emerging) caused by advancing human organization. This niche was the human home base. As the wolf adapted it evolved into the animal now known as the pariah dog. This wolf/dog was most likely caught up in the colonization of the world by *H. sapiens* and the human–dog co–operative competed only too successfully against both the Neanderthal (the belt and braces model of human evolution) and the wild wolf. The thesis reports studies on the pariah dog, including observations by the writer in India, Papua New Guinea and elsewhere, on its behaviour in developing countries. Applying the naturalistic perspective to the pariah was argued as likely to shed light on the way human and dog societies interact.

The human–dog complex was discussed as an extended phenotype and, to illustrate this, reference was made to the way the capacity for rapid enunciated speech in human beings may have been facilitated by their association with the dog. It seems inexplicable for evolving human beings to lose such an important tool for survival as a developed sense of smell, unless loss of that tool could be compensated for by the ability to speak. It was conjectured that *Homo sapiens* could make the evolutionary break through to enunciated speech only because in human home bases there were evolving dogs with advanced sensory capacity. With this, the extension of the phenotypes had begun.

With the enhanced capacity for speech, *H. sapiens* could develop a high level of organization. The Neanderthal and *H. sapiens* were products of a functional branch point that *H. erectus* reached in the process of its

evolution. It was proposed that Neanderthal and *H. sapiens* co–existed for tens of thousands of years but articulate human beings with watch dogs survived while inarticulate Neanderthal did not, despite their brawn and olfactory prowess. Similarly, dogs thrived while wolves have not, because of the protection the better organized *H. sapiens* home bases afforded dogs and also because, to survive and reproduce, dogs needed to spend less energy as scavenging tenants of an intelligent biped than did their wild cousins which had to hunt to survive.

In arguing the case for biological inter–connectedness in an extended phenotype, notions of human separateness from animals are challenged radically. Human beings and dogs are both animals shaped by the human home base in which they evolved. Therefore, part of what defines a human being is an association with dogs, and *vice versa*. By corollary, it was argued that it is human nature to associate with dogs, and *vice versa*. The thesis thus includes a postmodern look at human nature. Although the issue of what constitutes human nature was too broad to be dealt with at length in this thesis, the idea of biological inter–connectedness of human beings and other animals should prove a rich field for further research.

The objective of adding to the theoretical basis of urban animal management was met in part by using the naturalistic perspective to dissect the orthodox discourse of the dog as an object in human ownership. This discourse is usually expressed as responsible pet ownership. In western societies at least, the discourse is founded, firstly, on belief in God–given

dominion and stewardship over animals and, secondly, on modern scientific certainty that the dog was created through a process of domestication by human beings. In either case the effect has been to institutionalize an attitude to the dog as an object created for human gratification. The process by which this attitude developed was examined in Chapter 2 through an analysis of the evolution of western thought. The concept of animals as others is seen to be an anthropocentric construct. As such the concept is not a good basis for addressing human–animal relationships because discussion can be self–referencing and ignore realities such as biological connections between all animals in, for example, the urban environment.

At the same time, the naturalistic perspective exposes the institutionalization of otherness as a technique for the survival of human home bases. While it shows that it is the nature of human beings to make public policy for the survival (and well being) of the group the perspective also shows that otherness is not an adequate basis for public policy. What is good for the dog is likely to be good for people because of shared evolutionary histories and needs. There are also sound anthropocentric reasons for using a naturalistic perspective since the policy goal of human well being is likely to include access to dog keeping.

The brief discussion in Chapter 2 questions whether urban animal management has made the transition from the 'family' model of government, with its single dimension of watchful control over the impacts of one group on another, to a more creative administration of resources for the

convenience of all members of the community. In Chapter 5 it is acknowledged that many persons in Australia are actively working to make urban animal management into a more creative public enterprise.

There is much empirical and anecdotal evidence of a complex relationship between human beings and what are now regarded as pet dogs. This relationship has been described in Chapter 4 as having psychological, physiological and health effects which can be measured quantitatively and qualitatively. The complexity of the relationship provides support for the hypothesis of biological inter–connectedness of the two species. There are many obvious economically rational reasons for having a dog as a pet, but to accept these at face value is to beg the question 'why is the dog so useful?' It was suggested in the thesis that the dog's apparent usefulness is in fact a symptom of dependency on the dog by human beings. The naturalistic perspective shows that people need to have access to dogs for a whole range of evolved reasons.

The biological need for people to associate with dogs may have very broad policy implications. The thesis argued this by referring to an idea that human beings can crowd together more harmoniously than other animals, because of their ability to conceptualize space, and so stabilize their population naturally. It was argued that dog keeping may assist human beings to conceptualize space. Sociological research in communities where dogs do not occur, if such exist, could yield interesting results in this regard.

In keeping with its naturalistic perspective, the thesis used an evolutionary metaphor when dealing with legislative matters. Chapter 3 describes the arrival in Australia of British colonizers, who brought their dogs, their laws and their attitudes to nature. This was described as the arrival of human home bases seeking to survive in a hostile natural environment. The evolution of thought regarding urban dogs since colonization has been traced through Australian legislation to show that the legislation changed over time from regarding the dog as an animal to defining the dog through its ownership by human beings.

The naturalistic perspective was discussed in relation to urban planning. It was noted that a few urban planners have accepted the animal nature of human beings. These planners have argued against runaway technological approaches to city planning and sought a return to a natural sort of untidiness in city planning so that people are not squeezed out of recognition by their artificial environments. They have argued against turning the city into a monoculture of human beings. The thesis has suggested that unless there is a mix of species in the urban environment, the public health and well being in that environment may suffer.

Some problems which the dog causes in the urban environment, such as nuisance ranging from barking, defaecating in public places and so on through to serious attacks on people and other animals, were discussed. Reference was made to urban designers in Australia who, only recently, have addressed the animal nature of the dog in their designs to try to

minimize these problems and to maximize the well being of both animal species. A case study was used to focus the naturalistic perspective on one issue high on the agenda of local government, dog faeces in public places, to suggest adaptive rather than adversarial public policies.

This thesis has been about enlightening attitudes in public policy. It has been argued that the dog is not merely an object in indulgent human ownership, a pet or a toy, to be disposed of by rules and regulations. The discussion moved well away from the rhetoric of the dog as man's best (servile) friend to an argument for biological interdependency. The implications of public policy which recognizes the subjectivity of the human–dog relationship, that is, that people need to associate with dogs in the urban environment, are significant for community professionals in health and welfare, architects and urban planners, politicians and legislators, lawyers, doctors and veterinarians, teachers and administrators of education, non–government organizations and community groups, and so on, not only for urban animal managers. The suggestion of a co–evolved facet of human nature has very wide theoretical implications too, implications which are much wider than the scope of the thesis. There should therefore be great potential for more research in the area of the evolved biological association between people and dogs (and other urban animals).

It is hoped that the arguments in this thesis will help policy makers and urban animal managers to intelligently reappraise the orthodox discourse of control expressed in the term 'responsible pet ownership'. It is

hoped that they will realize that to try to legislate the dog from the urban environment is to make the same reactionary choice, in public policy terms, as the Neanderthal made, in biological terms. After all, they are not legislating for the dog (which cannot read print) but for human society, which has a natural place for the dog in its soul.

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Appendix

Survey of responses made by the ACT Dog Control Unit to complaints about urban dogs in the Australian Capital Territory (ACT)

Introduction

In March a nine year old girl in Kambah, a suburb of Canberra, was attacked by two dogs, who threw her 'as if she was a rag doll' (*The Canberra Times* 27 March 1993:1) and bit her back, legs and arms. The girl suffered severe injuries which required that she be admitted to hospital.

Mr Bill Wood, Minister for Lands, Environment and Planning of the Government of the Australian Capital Territory convened a meeting on of about 30 concerned people to discuss follow-up action. A panel comprising a representative of the Royal Society for the Prevention of Cruelty to Animals (Neil Turner), Canberra Kennel Association (Max Martin), Child Accident Foundation of Australia (Denise Blayden) and the Australian Veterinary Association (David Paxton) moderated the meeting, which was chaired by the Minister.

Discussion at the meeting was referred to a working party comprising Robin Nielsen (Chairman, Department of Lands, Environment and Planning), Philip Revill (Registrar of Dogs), Virginia Dubickas (Deputy Registrar of Dogs), Max Martin (Canberra Kennel Association), David Paxton (Australian Veterinary Association), Colin Bates (Pet Industry), Neil Turner (Royal Society for the Prevention of Cruelty to Animals), Denise Blayden (Child Accident Prevention Foundation), Bob Sutherland (Weston

Creek Community Association) and Karen Nicholson (representing Helen Szuty, Member of the Legislative Assembly).

The working party met on 13 May and 3 June 1993 and then reported to the Minister along the following lines:

- Dog registration should be improved through point of sale registration; education; registration drive; publicity; more points at which registration of dogs can be undertaken; amnesty for unregistered dogs and increased penalties for unregistered dogs.

- Education of the public about dangerous dogs should be improved through promoting coordinated education programs such as PetPep, run by the Australian Veterinary Association for school children, and information through government outlets.

- Unwanted dogs should be reduced in number through an increase in the differential for registration fees for entire/desexed dogs; control of the sale of dogs through the classified advertisements in the press; preventing ownership of dogs by those convicted under the Dog Control Act 1975; increased penalties for dog attacks; facilitating euthanasia of dangerous dogs at the dog pound; ceasing selling dogs from the dog pound and an increase in patrols by the Dog Control Unit.

- Dangerous dogs should be addressed directly by encouraging obedience training; increasing fines for roaming/attacking dogs and consideration of licensing of guard dog trainers.

- The Dog Control Act 1975 should be amended to permit earlier registration of dogs.

The writer obtained the permission of the Minister to access records of the Dog Control Unit, in an attempt to determine from a public policy viewpoint the activity of dogs in the urban situation. The writer (David Paxton) conducted a survey of responses made by the ACT Dog Control Unit to complaints about urban dogs in the Australian Capital Territory. The results of the survey were presented to the Minister on 4 November 1993.

Responses of ACT Dog Control Unit Inspectors to requests concerning dogs

From April through September 1993, to ascertain activities of urban dogs in Canberra and as part of the process of collecting field data for this thesis, the writer compiled data from Dog Complaint Forms used by the ACT Dog Control Unit. The forms are referred to as 'job cards' here, as the forms tended to be used as such. The forms were not set up to collect data in a precise scientific way, and occasionally interpretation of imprecise descriptions was necessary. The data were thus considered descriptive only and were not subjected to statistical analysis. The data represented the activities of the Dog Control Unit during business hours and not necessarily

the activities of urban dogs. Thus the data could, for example, have represented different levels of reporting due to demographic rather than canid causes. Nonetheless, it was considered intuitively that there was a relationship between Dog Control Unit activity and perceived impacts of dogs in public places.

Procedures

The usual trigger for a response by the Unit was a request for action from a member of the public to the office of the Registrar of Dogs. This office was located at Tuggeranong, a satellite city situated some 20 kilometers from Canberra. This office was synonymous with the office of the Dog Control Unit. The request for action was usually received by telephone and most frequently was in the form of a complaint about the behaviour of one or more dogs. Details of the request were entered in Dog Complaint Form IO491. Police might also request action by the Unit, or action might be initiated by an Inspector on patrol. Once the request for action was received, it was relayed by radio telephone or mobile telephone to Inspectors in the field.

Requests from the public might also concern injured or dead dogs and cats, or owned dogs being given in for destruction.

The Inspector entered on the form what action had been taken on each request, and the form was filed by suburb. On occasions, for instance where the owner of the dog in question had been asked to contact the Registrar of Dogs, follow up action also was recorded on the form.

If there had been an attack by a dog and the complainant wished to pursue the matter, a separate form (Record of Dog Attack) was completed by the complainant. The circumstances of the attack were recorded on this form. Where the attacking dog had been impounded, the daily record from the pound might be attached to the form.

The above description applies to the process authorized under the Dog Control Act 1975 concerning dogs in public places. Where the dog created a nuisance, for example, by barking, but was not in a public place, the matter was dealt with under the Animal Nuisance Control Act 1975. The description of the process concerning animal nuisances is not dealt with in this report.

Method

The period of time covered by the data was from 1 May 1989, to correspond approximately with the period from which the ACT became self governing, to 30 June 1993. It was intended to analyze all job cards created during this period, but the task clearly was too big for a single researcher. A look in the Dog Control Unit's filing cabinets suggested that in excess of 10,000 jobs had been requested in the period.

Therefore, it was decided to use ten suburbs as cluster samples, based on the statistical divisions of the ACT. There were about 100 suburbs in Canberra and it was expected that ten suburbs would yield about 1,000 job cards for analysis, about ten per cent of the estimated total of job cards. This workload was judged to be reasonable for the quality of information which was likely to be gained.

In fact, however, the required sample was obtained from only four suburbs. Files were chosen at random from the filing cabinet at the Dog Control Unit, where the shelves are arranged to reflect, roughly, statistical divisions. Files for Weetangera and Oxley were thus selected and the data from them entered in *Dsurvey*, a data entry software package. The next file selected in this way was the file on Duffy. The Duffy files proved to be far more voluminous than either of the Weetangera or Oxley files. It was clear that even the proposed cluster sampling approach would be too time consuming to be worthwhile, given that the information which would be gained from the job cards was recognized to be of limited quality, since the purpose of the job cards was different to that of a survey questionnaire.

Duffy was regarded as a 'problem' suburb by the staff of the Dog Control Unit, whereas Weetangera and Oxley were not so regarded. Therefore, to balance the collection of data it was decided to select another suburb which was regarded as a problem by staff of the Unit, but to select one which was on the north side of Canberra and of probable different demographic characteristics to Duffy, which was a relatively new suburb. The established suburb of Ainslie was chosen.

Results

A total of 1,013 job cards created within the period 1 May 1989 to 1 July 1993 were analyzed. Of these, 77 related to Weetangera, 124 to Oxley, 323 to Duffy and 489 to Ainslie.

Not all job cards recorded the sex of the complainant. Of those which did, 330 male and 545 female complainants were recorded.

Some 60 per cent (612) of the job cards recorded only one category of complaint about dogs in public places (for example, roaming), 29 per cent (297) recorded two categories (for example, roaming and defaecating), while 10 per cent recorded three or more categories of complaint (for example, roaming, savage, jumping fences). The distribution of complaints is indicated roughly in the following table:

Table 1: **Distribution of complaints**

Complaint	Frequency
Dog roaming at large	726
Savage (menacing or attacking) dog	308
Dog defaecating in public place or on complainant's property	97
Dog scavenging in garbage bin	83
Dogs forming packs	67
Dogs jumping fences	59
Dogs digging in complainant's garden	47
Dead cat to be picked up (road accident)	24
Dead dog to be picked up (road accident)	22
Injured animal to be picked up	21
Dog roaming at school	20
Dog obstructing traffic	20

Twelve of the job cards did not have records of how many dogs were involved in the complaint. Of the remainder (1,001), in 729 job cards (73

per cent) only one dog was recorded as involved, in 149 cards (15 per cent) two dogs were recorded, and in 99 cards (10 per cent) three or more dogs were recorded as involved. It appeared that 1,350 dogs were complained about, though this figure included cases where a single dog offended several times.

Reporting of the breed of dog to the Inspector was notably imprecise. It appeared from the records that a commonly known breed name was applied to a range of dogs, while it also appeared that a multiple offender was probably reported under different breed names by different complainants. Many complainants did not specify a breed of dog, or the dog may have simply been described as 'big and brown', for example. Nonetheless, complainants did mention some 78 breeds or cross breeds, as shown in Table 2. The allocation of figures in the table is arbitrary in the sense that breeds mentioned may be cross breeds, thus a Labrador/Cattle Dog cross might be allocated to the Labrador or Cattle Dog category. The breeds have been listed as they were perceived by the complainant.

Table 2: **Breed frequency**

Breed	**Frequency**	**Breed**	**Frequency**
Breed unspecified	471	Kelpie type	47
Bull Terrier type	176	Doberman type	40
Cattle Dog type	170	Rottweiler type	38
German Shepherd type	128	Border Collie type	35
Labrador type	54	Terrier type	32

Despite the frequency with which complainants considered a dog to be savage, in only 90 cases (8.8 per cent) did the complainant complete a Record of Dog Attack form. However, in several cases, although an attack did occur, no Record of Dog Attack form was completed. Even though the population of these forms was only 90, it does yield some information. In 61 cases the victim was a person, in 25 cases one or more animals, and in 4 cases both an animal and a human being were attacked, as when people intervened when an animal was attacked by a dog. In most (69 or 77 per cent) the victim of the attack was of mature age. In 54 cases (60 per cent) there was no interaction recorded which might have provoked the attacking dog. In 8 (8.9 per cent) of the remaining cases it was recorded that the victim had been walking a pet, riding a bike, jogging or playing in such a way which may have provoked the attack. In 4 cases (4.4 per cent) there may have been behaviour which served specifically to provoke an attack.

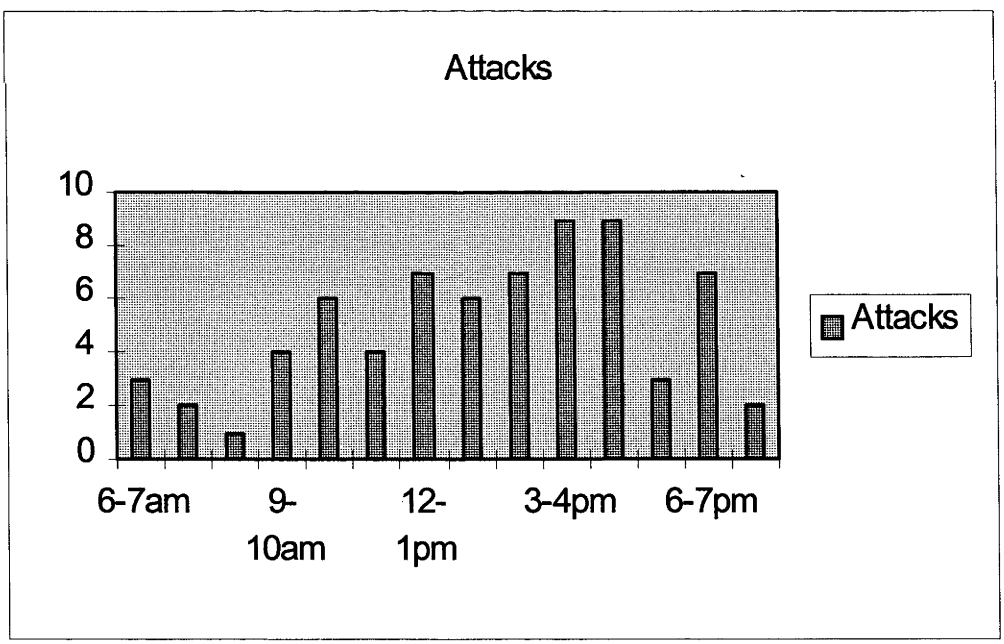
People were usually very specific in recording when the attack occurred, though in twenty cases no time of attack was recorded at all, because it occurred during the night (as when chickens were attacked in the back yard) or the attack itself may not have been reported promptly. The temporal distribution (as recorded) of attacks is shown in Table 3, where the times are recorded in one hour batches.

Table 3: **Time of attack**

Time, hours	Attacks	Time, hours	Attacks	Time, hours	Attacks
0600–0700	3	1100–1200	4	1600–1700	9
0700–0800	2	1200–1300	7	1700–1800	3
0800–0900	1	1300–1400	6	1800–1900	7
0900–1000	4	1400–1500	7	1900–2000	2
1000–1100	6	1500–1600	9	Total	70

The temporal distribution of attacks for which the time was recorded has been depicted in Figure 1.

Figure 1: **Temporal distribution of dog attacks**



In 50 cases (56 per cent) attacks occurred on the footpath or public nature strip but the job cards did not record the proximity of the attack to the attacking dog's home. About 32 per cent (29 cases) of attacks occurred in the victim's own yard, and 5 cases (5.5 per cent) of attacks occurred in a playground or park.

The records of interviews in the Record of Dog Attack were not complete, and did not allow the severity of the attack to be judged precisely. It was occasionally necessary to make some assumptions. On this basis, 30 records (33 per cent) indicate the attack was with menace only, 25 (27.8 per cent) recorded that injuries were not serious enough to require medical attention, and 35 records (39 per cent) indicate that injuries sustained in the attack were serious enough for medical or veterinary attention to be required. There were no gravely serious attacks on people recorded, but there were records of animals in the attack being killed or requiring intensive veterinary attention.

The records do not capture well the mood of the person attacked, nor that of the owner of an animal which was attacked. It appeared that most (96 per cent) people wanted the owner of the attacking animal to be warned that the attack had occurred. Some 81 per cent indicated a willingness to attend court to give evidence, while 58 per cent indicated a willingness to initiate court proceedings. It appeared that about 47 per cent of people sought compensation from the owner of the attacking animal and 53 per cent did not. Only 35 records showed whether destruction of the attacking animal

was considered. Of these, 29 records (83 per cent) indicated that the destruction of the attacking animal was not considered warranted.

In 67 cases (88 per cent) the records indicated that the owner of the attacking animal was made aware of the attack, being made aware of the incident by an Inspector or by the human victim of the attack.

In 35 cases (38.9 per cent) it was recorded whether the attack might have been predicted through previous behaviour of the attacking dog. Of these cases, in 25 (71.4 per cent) it was recorded that there was reason to expect that an attack would occur. In the remaining 10 cases (28.6 per cent) no prior history of aggression or attack by the dog was recorded. In only 24 cases (26.7 per cent) was a note recorded as to whether the attacking dog was registered at the time of attack. In 17 of these cases (70.8 per cent) the attacking dog was registered.

In all but 36 instances in the 1,013 job cards, the response of the Inspector was recorded. In some cases the response was straightforward, for example, the dog was picked up. In other cases the Inspector became involved actively in an investigation of the complaint or in providing advice to the owner of the animal which was the cause of the complaint. Such activity might include inspection of and advice on fencing, for example. In most cases however the job cards simply record the response by the Inspector as a coded activity. For example, a 'Code 16' is a form that requires an absent dog owner to contact the Registrar of Dogs (it might be noted here that most people appeared to take a Code 16 request quite seriously, though the records show an occasional obdurate citizen).

A single complaint might involve the Dog Control Unit in several responses, for example, a note in the dog owner's letter box might be followed up with a visit from an Inspector, or where the dog complained about had not been found (recorded in code as 'Patrolled Not Seen'), other patrols might be undertaken to try to find the dog. A summary of responses is provided in Table 4, but it may be noted that the coding system, while simplifying recording, reduced information available for detailed analysis.

Table 4: **Summary of responses by Inspectors to complaints**

Response	Cases	Response	Cases
Pick up animal	233	Pick up dead animal	37
Contact Registrar of Dogs	231	Pick up dog for destruction	23
Patrolled not seen	230	Interview complainant	20
Letter in letter box	174	Take injured animal for treatment	3
Interview owner	117	Infringement notice issued[1]	1

[1] Infringement notices and on-the-spot fines were innovations introduced near the end of the survey period

Perusal of the 1,013 job cards gave the writer the impression that an official response to a complaint often defused an issue, in the sense that the various actors (human and canid) in the case usually did not appear in further records. The records did not show whether this was because the act of complaining had a soothing effect on the complainant, whether the presence of an Inspector had a salutary effect on the owner's (and perhaps also the dog's) behaviour, or whether it was due to other effects.

In a number of instances, clusters of activity appeared in the job cards, which on the one hand suggested that either a single animal or pack of animals was responsible for a series of complaints or, on the other hand, that a particular person or group of people had orchestrated a series of complaints. Occasionally, abusive behaviour of animal owners was recorded in the job cards.
